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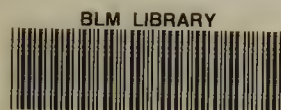
SOIL SURVEY OF BUREAU OF LAND MANAGEMENT LANDS
WESTERN RIO ARriba COUNTY AND NORTHWESTERN SANDOVAL COUNTY
New Mexico

599
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1976

BLM-SCS Cooperative Agreement No. NMSO-51 dated May 19, 1970

Information contained in this interim report is
preliminary and subject to change.

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WESTERN RIO ARriba COUNTY AND NORTHWESTERN SANDOVAL COUNTY
New Mexico

BLM-SCS Cooperative Agreement No. NM50-51 dated May 18, 1976

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DESCRIPTION OF AREA

The survey area is in the western part of Rio Arriba County and the northwestern part of Sandoval County. It is bounded by Carson National Forest and Jicarilla Apache Reservation on the east, the State of Colorado on the north, San Juan County on the west, and McKinley County on the south. Total area encompassed by this survey is 624,912 acres.

Topography within the survey area consists of high rimmed areas and plateaus dissected with deep canyons and relatively narrow valley bottoms and floodplains of the Largo, Gobernador, La Jara, Carizzo, and Francis Washes. The majority of the area drains into the San Juan River by way of the Largo and Chaco washes.

Elevation in the survey area ranges from a low of 6,000 feet in the Largo Canyon to a high of 7,566 feet on Crow Mesa.

The survey area encompasses two major land resource areas. These are the New Mexico and Arizona plateaus and mesas (MLRA 36, WF-1), and San Juan River Valley, mesas and plateaus (MLRA-37, ND).

Climate in the survey area ranges between a low and moderately high semiarid regime. In MLRA 36, average annual precipitation ranges from 10 to 13 inches. Mean annual air temperature ranges from 48 to 52 degrees F, and the frost-free season is 120 to 150 days. MLRA 37 has an average annual precipitation ranging between 6 to 10 inches. Mean annual air temperature ranges from 51 to 55 degrees F, and the frost-free season is 140 to 160 days.

Vegetation in the survey area ranges from pinyon, juniper, western wheatgrass, and blue grama in MLRA 36, to Indian ricegrass, galleta, sage, and sand dropseed in MLRA 37. The significant difference in vegetation is pinyon and juniper in MLRA 36. Their growth and density serve as an indicator of climatological change from a dry, semiarid climate to a moist intergrade of that same climate.

Major uses of the survey area are for energy production, recreation, and range for livestock. Energy production is the most important use of the northern part of the survey area. It makes up a large portion of the San Juan Basin Gas Field. Numerous natural gas and oil wells are found in this area and contribute in making up the vast reserves of natural energy found in northern New Mexico.

Navajo Lake and the excellent hunting of native and exotic animals in the northern portion of the survey area are contributing to the increasing recreational use of it. Excellent fishing, boating, and camping have fast become the major points of attraction at Navajo Lake.

The use of the survey area for range is not limited to any one area, but rather encompasses it as a whole. There are, however, different degrees of quality of range which depend on present and past grazing pressures, climate, and present vegetation which differ throughout the area.

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

WESTERN RIO ARriba COUNTY AND NORTHWESTERN SANDOVAL COUNTY

ALPHABETICAL IDENTIFICATION LEGEND

<u>Map Unit Number</u>	<u>Name of Mapping Unit</u>
235	Badland
010	Binton-Councilor-Lybrook association, gently sloping
275	Blancot-Councilor-Binton association, gently sloping
101	Blancot-Lybrook association, gently sloping
155	Doak-Shiprock association, gently sloping
035	Fort Collins-Navacity association, gently sloping
032	Fort Collins-Oelop-Gobernador association, gently sloping
85	Fruitland-Persayo-Sheppard complex, hilly
031	Gobernador-Fort Collins association, gently sloping
095	Oelop loam, gently sloping
245	Riverwash
220	Rock outcrop-Travessilla-Shingle complex, extremely steep
110	Travessilla-Shingle-Oelop association, moderately steep

NOTE: The soil series used in this interim report has not been correlated in the survey area. They are subject to change.

The following names are field names only and do not have series status:

Councilor
Gobernador
Lybrook
Navacity
Oelop

230--Badland

These miscellaneous areas consist of rolling to very steep, nonstony barren land dissected by many intermittent drainage channels, entrenched in soft shale at elevations of 6,800 to 7,200. Slopes are 5 to 80 percent. It occupies about 90 percent of the map unit. The average annual precipitation is 8 to 12 inches, and average annual air temperature is 50 to 53 degrees F. The frost-free season is 120 to 160 days.

Included in this map unit are small areas of Rock outcrop, Binton, and Councilor soils. Rock outcrop is exposed outcrops of barren sandstone. Binton soils are deep, sodium-affected, and moderately fine textured. Councilor soils are deep and moderately coarse textured. These inclusions make up about 10 percent of the map unit and are interspersed throughout.

010--Binton-Councilor-Lybrook association, gently sloping

This association consists of nearly level soils on floodplains and upland valley bottoms and nearly level to gently sloping soils on alluvial fans at elevations of 6,000 to 6,900 feet. Slopes are 0 to 8 percent. The average annual precipitation is about 8 inches, and the mean annual air temperature is about 53 degrees F. The frost-free season is 140 to 160 days. The Binton silt loam, 0 to 3 percent slopes, makes up about 35 percent of this association and occupies floodplains and upland valley bottoms. The Councilor sandy loam, 3 to 8 percent slopes, makes up about 30 percent and occupies alluvial fans, and the Lybrook silt loam, 0 to 2 percent slopes, about 15 percent and occupies floodplains and upland valley bottoms.

The remaining 15 percent of this association consists of small areas of Blancot soils, moderately coarse and moderately fine textured soils and Slickspots. Blancot soils have an argillic horizon. The moderately coarse textured soils have a calcareous profile, and the moderately fine textured soils are not sodium affected. Slickspots are sodium affected areas with crusted surfaces, slow permeability, and barren of vegetation.

The Binton silt loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface layer is pale brown silt loam about 2 inches thick. The substratum is stratified pale brown, yellowish brown and brown clay loam, silty clay loam and sandy clay loam to about 50 inches. Below this, to a depth of 60 inches, is brown clay.

The soil has slow permeability. The available water capacity is moderate. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 14 inches. Surface runoff is medium and the water hazard is moderate, but the soil is highly susceptible to gully erosion and piping due to its high sodium content. Soil blowing hazard is high.

The Councilor sandy loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface layer is pale brown sandy loam about 2 inches thick. The substratum is brown, light yellowish brown, pale brown and yellowish brown sandy loam to a depth of 60 inches.

The soil has moderately rapid permeability. The available water capacity is moderate. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 38 inches. Surface runoff is medium and the water erosion hazard is moderate and soil blowing hazard is high.

The Lybrook silt loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface layer is pale brown silt loam about 2 inches thick. The substratum is pale brown clay loam to about 7 inches. Below this to a depth of 60 inches is pale brown clay.

The soil has slow permeability. The available water capacity is moderate. The effective rooting depth is about 60 inches. The average annual wetting depth is about 14 inches. Surface runoff is medium and the water erosion hazard is moderate, but the soil is highly susceptible to gully erosion and piping due to its high sodium content. The soil blowing hazard is high.

This unit is used for grazing livestock and wildlife habitat.

The potential native plant community on the Binton silt loam and Lybrook silt loam soils is mainly alkali sacaton, galleta, fourwing saltbush, and black greasewood. The potential native plant community of the Councilor sandy loam soil is mainly Indian ricegrass, dropseed grasses, needleandthread, and fourwing saltbush.

As the plant community deteriorates on the Binton and Lybrook soils, there is an increase in the proportion of black greasewood, shadscale, black sagebrush, and broom snakeweed with wide interspaces of bare soil. As the plant community deteriorates on the Councilor soils, there is an increase in the proportion of big sagebrush, broom snakeweed, Mormon-tea, and threeawn grasses.

Grazing management should be implemented that will sustain or increase the vigor, production, and reproduction of Indian ricegrass, alkali sacaton, fourwing saltbush, and galleta.

Adequate residues and litter must be maintained on this unit to prevent soil blowing and minimize water erosion.

Planned grazing systems which vary the seasons of grazing and rest in pastures during successive years, combined with proper grazing, will result in a balanced plant community which provides a variety of high quality forage.

This unit is suitable for such range management practices as deferred grazing, fences, pipelines, and wells.

The Lybrook and Binton soils have limited suitability for range management practices such as ponds and erosion control structures because of high sodium content.

270--Blancot-Councilor-Binton association, gently sloping

This association consists of nearly level to gently sloping soils on alluvial fans and upland valley bottoms at elevations of 6,600 to 7,000 feet. Slopes are 0 to 8 percent. The average annual precipitation is about 8 inches and the means annual air temperature is about 53 degrees F. The frost-free season is 140 to 160 days. Blancot fine sandy loam, 3 to 8 percent slopes, makes up about 40 percent of this association and occupies alluvial fans. The Councilor sandy loam, 0 to 3 percent slopes, makes up about 25 percent, and the Binton clay loam, 0 to 3 percent slopes, about 20 percent and both occupy upland valley bottoms and floodplains.

The remaining 15 percent of this association consists of small areas of moderately coarse and moderately fine textured soils and Slickspots. The moderately coarse textured soils have a calcareous profile and are associated with Councilor and Binton soils. The moderately fine textured soils are not sodium affected and are associated with Councilor and Binton soils. Slickspots are sodium affected areas with crusted surfaces, slow permeability and barren of any vegetation.

The Blancet fine sandy loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface is light yellowish brown, fine sandy loam, about 2 inches thick. The subsoil is pale brown and brown sandy clay loam and clay loam about 19 inches thick. The substratum is yellowish brown, pale brown and light yellowish brown sandy loam to a depth of 60 inches.

The soil has moderately slow permeability to about 21 inches and moderately rapid below. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 15 inches. Surface runoff is medium. The water erosion hazard is moderate, and the soil blowing hazard is high.

The Counselor sandy loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface layer is pale brown sandy loam about 3 inches thick. The substratum is stratified brown and pale brown loam, sandy loam and fine sandy loam to a depth of 60 inches.

The soil has moderately rapid permeability. The available water capacity is moderate. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 21 inches. Surface runoff is medium. The water erosion hazard is moderate and the soil blowing hazard is high.

The Binton clay loam is deep, well drained and sodium affected. It formed in alluvium from sedimentary rocks. Typically, the surface layer is pale brown clay loam about 2 inches thick. The substratum is brown and pale brown loam and clay loam to about 26 inches. Below this, to a depth of 60 inches, is brown and pale brown sandy clay loam and sandy loam.

The soil has moderately slow permeability. The available water capacity is moderate. The effective rooting depth is about 60 inches. Surface runoff is medium. The water erosion hazard is moderate but the soil is highly susceptible to gully erosion and piping due to its high sodium content. The soil blowing hazard is high.

This unit is used for grazing livestock and wildlife habitat.

The potential plant community on the Blancot fine sandy loam soil is mainly Indian ricegrass, galleta, blue grama, and big sagebrush.

As the plant community deteriorates, the desirable forage plants diminish and there is an increase in the proportion of big sagebrush, broom snakeweed, threeawn grasses, annual forbs, and grasses.

Grazing management should be designed to increase the productivity and reproduction of needleandthread grass, Indian ricegrass, fourwing saltbush, and galleta.

The potential plant community on the Binton clay loam soil is mainly alkali sacaton, western wheatgrass, fourwing saltbush, and black greasewood.

As the plant community deteriorates, the desirable forage plants diminish and there is an increase in the proportion of black greasewood, shadscale, broom snakeweed, and black sagebrush.

Grazing management should be designed to increase the productivity and reproduction of alkali sacaton, western wheatgrass, fourwing saltbush, and galleta.

Adequate residues and litter must be maintained on the Blancot and Councilor soils to prevent soil blowing and damage to young plants.

Planned grazing systems, which vary the seasons of grazing and rest in pastures during successive years, result in a balanced plant community which provides a variety of high quality forage during all seasons of the year.

This unit is suitable for such range management practices as deferred grazing, planned grazing systems, fencing, and livestock water wells.

The Binton clay loam soil has limited suitability for range management practices such as stock ponds, retention dams, and earthen structures because of high sodium content of the soils.

This unit is not suitable for such range management practices as range seeding because of low precipitation.

101--Blancot-Lybrook association, gently sloping

This association consists of nearly level to gently sloping soils on alluvial fans and nearly level soils on upland valley bottoms at elevations of 6,600 to 7,000 feet. Slopes are 0 to 8 percent. The average annual precipitation is about 53 degrees F. The frost-free season is 140 to 160 days. Blancot loam, 2 to 8 percent slopes, makes up about 55 percent of this association and occupies alluvial fans. The Lybrook clay loam, 0 to 2 percent slopes, makes up about 25 percent and occupies upland valley bottoms.

The remaining 20 percent of this association consists of small areas of Binton and Councilor soils and Slickspots. Binton soils are moderately fine textured and lack a B horizon. Councilor soils are moderately coarse textured and also lack a B horizon. Slickspots are sodium affected areas with crusted surfaces, slow permeability and barren of vegetation.

The Blancot loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface is pale brown loam about 2 inches thick. The subsoil is brown clay loam about 13 inches thick. The substratum is pale brown clay loam, loam, and sandy loam to a depth of 60 inches.

The soil has moderately slow permeability. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 15 inches. Surface runoff is medium. Soil blowing hazard and water erosion hazard are moderate.

The Lybrook clay loam is deep, well drained, and nonsaline and nonalkali. It formed in alluvium from sedimentary rock. Typically, the surface is pale brown clay loam about 2 inches thick. The substratum is brown clay to a depth of 60 inches.

The soil has slow permeability. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 9 inches. Surface runoff is medium. The water erosion hazard and soil blowing hazard are moderate, but the soil is highly susceptible to gully erosion and piping.

This unit is used for grazing livestock and wildlife habitat.

The potential plant community of the Blancot loam soil is mainly Indian ricegrass, galleta, blue grama, and big sagebrush.

As the plant community deteriorates, the desirable forage plants diminish, and there is an increase in the proportion of big sagebrush, broom snakeweed, threeawn grasses, annual forbs, and grasses.

Grazing management should be designed to increase the productivity and reproduction of needleandthread grass, Indian ricegrass, fourwing saltbush, and galleta.

The potential plant community on the Lybrook soil is mainly galleta, alkali sacaton, western wheatgrass, and big sagebrush.

As the plant community deteriorates, the desirable forage plants diminish and there is an increase in the proportion of big sagebrush, broom snakeweed, and annual forbs.

Grazing management should be designed to increase the productivity and reproduction of galleta, alkali sacaton, western wheatgrass, and fourwing saltbush.

Adequate residue and litter must be maintained on this unit to prevent soil blowing and damage to young plants.

Planned grazing systems which vary the seasons of grazing and rest in pastures during successive years, result in a balanced plant community which provides a variety of high quality forage during all seasons of the year.

This unit is suitable for such range management practices as deferred grazing, planned grazing systems, fencing, and livestock water developments.

This unit is not suitable for such range management practices as range reseeding because of low and unpredictable precipitation.

150--Doak-Shiprock association, gently sloping

The association consists of nearly level to gently sloping soils on mesas and plateaus at elevations of 6,600 to 7,000 feet. Slopes are 0 to 8 percent. The average annual precipitation is about 8 inches and the average annual air temperature is about 53 degrees F. The frost-free season is 140 to 160 days. The Doak fine sandy loam, 0 to 5 percent slopes, makes up about 50 percent of the association and occupies swales on mesa tops, and the Shiprock fine sandy loam, 5 to 8 percent slopes, about 35 percent and occupies hills on the mesa tops.

The remaining 15 percent of the complex consists of small areas of Blandot, Persayo and Sheppard soils and soils shallow to sandstone. Blandot soils are brown and moderately fine textured and are associated with the Doak soils in swales. Persayo soils are shallow to shale and are associated with breaks and ridge tops. Sheppard soils are sandy and are associated with Shiprock soils along ridge tops and breaks. These soils are interspersed throughout the map unit.

The Doak fine sandy loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface is light yellowish brown fine sandy loam about 5 inches thick. The subsoil is brown clay loam and sandy clay loam about 19 inches thick. The substratum is very pale brown clay loam, loam and silt loam to a depth of 60 inches.

The soil has moderately slow permeability. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 17 inches. Surface runoff is slow to medium and the water erosion hazard is slight to moderate and the soil blowing hazard is high.

The Shiprock fine sandy loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface layer is light yellowish brown fine sandy loam about 2 inches thick. The subsoil is brown and yellowish brown fine sandy loam and sandy loam about 16 inches thick. The substratum is yellowish brown and pale brown sandy loam to a depth of 60 inches.

The soil has moderately rapid permeability. The available water capacity is moderate. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 18 inches. Surface runoff is slow. The water erosion hazard is slight and the soil blowing hazard is high.

This unit is used for grazing livestock and wildlife habitat.

The potential plant community on the Doak fine sandy loam soil is mainly blue grama, western wheatgrass, galleta, and Indian ricegrass.

As the plant community deteriorates, the desirable forage plants diminish, and there is an increase in the proportion of broom snakeweed, big sagebrush, threeawn grasses, and annual forbs which normally occur in small amounts in the potential plant community.

Grazing management should be designed to increase the productivity and reproduction of western wheatgrass, needleandthread grass, galleta, and blue grama.

The potential plant community on the Shiprock fine sandy loam is mainly Indian ricegrass, blue grama, giant dropseed, and fourwing saltbush.

As the plant community deteriorates, the desirable forage plants diminish, and there is an increase in the proportion of threeawn grasses, broom snakeweed, annual forbs, and big sagebrush which normally occur in small amounts in the potential plant community.

Grazing management should be designed to increase the productivity and reproduction of Indian ricegrass, giant dropseed, fourwing saltbush, and New Mexico feathergrass.

Adequate residues and litter must be maintained on this unit to prevent soil blowing and damage to young plants.

Planned grazing systems which vary the seasons of grazing and rest in pastures during successive years, result in a balanced plant community which provides a variety of high quality forage during all seasons of the year.

This unit is suitable for such practices as deferred grazing, planned grazing systems, water developments, and fencing.

This unit is not suitable for such range management practices as range seeding and brush management because of low precipitation and wind erosion.

030--Fort-Collins-Navacity association, gently sloping

This association consists of nearly level to gently sloping soils on upland valley bottoms and alluvial fans at elevations of 6,000 to 6,800 feet. Slopes are 0 to 8 percent. The average annual precipitation is about 12 inches and the mean annual air temperature is about 50 degrees F. The frost-free season is 120 to 150 days. The Fort Collins loam, 3 to 8 percent, makes up about 55 percent of this association and occupies alluvial fans. Navacity sandy loam, 0 to 3 percent slopes, makes up about 35 percent and occupies the upland valley bottoms.

The remaining 10 percent of the association consists of small areas of Gobernador soils and a moderately coarse textured soil. These soils are interspersed throughout the mapping unit. Gobernador soils are fine textured and sodium affected.

The Fort Collins loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface layer is pale brown loam about 3 inches thick. The subsoil is brown clay loam about 12 inches thick. The substratum is brown and pale brown sandy loam and fine sandy loam to about 60 inches.

The soil has moderately slow permeability. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 15 inches. Surface runoff is medium and the water erosion hazard and soil blowing hazard are moderate.

The Navajo sandy loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface layer is brown sandy loam about 3 inches thick. The substratum is stratified brown and pale brown fine sandy loam, sandy loam, clay loam to about 60 inches.

The soil has moderately slow permeability. The available water capacity is high to very high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 15 inches. Surface runoff is medium. The water erosion hazard and soil blowing hazard are moderate, but the soil is highly susceptible to gully erosion.

This unit is used for grazing livestock and wildlife habitat.

The potential native plant community on this unit is mainly western wheatgrass, alkali sacaton, galleta, and big sagebrush. Annual forbs will be present in large amounts during years of above normal moisture.

As the plant community deteriorates on this unit, the desirable forage plants diminish and there is an increase in the proportion of big sagebrush, galleta, and annual forbs which normally occur in small amounts in the potential plant community.

Grazing management should be implemented that will sustain or increase the vigor, production, and reproduction of western wheatgrass, Indian ricegrass, muttongrass, and alkali sacaton.

Adequate residues and litter must be maintained on this unit to prevent soil blowing and damage to young plants.

Planned grazing systems which vary the seasons of grazing and rest in pastures during successive years, result in a balanced plant community which provides a variety of high quality forage.

This unit is suitable for such range management practices as earthen structures, fencing, water developments, and planned grazing systems.

032--Fort Collins-Oelop-Gobernador association, gently sloping

This association consists of nearly level to gently sloping soils on alluvial fans and nearly level soils of upland valley bottoms at elevations of 6,200 to 6,900 feet. Slopes are 0 to 8 percent. The average annual precipitation is about 12 inches and the mean annual air temperature is about 50 degrees F. The frost-free season is about 120 to 150 days. Fort Collins loam, 2 to 8 percent slopes, makes up about 40 percent of this association and occupies swales on alluvial fans. The Oelop, fine sandy loam, 2 to 8 percent slopes, makes up about 30 percent and occupies undulating hills on alluvial fans, and the Gobernador clay loam, 0 to 2 percent slopes, about 15 percent and occupies upland valley bottoms.

The remaining 15 percent of this association consists of small areas of Rock outcrop, Slickspots and Navacity, Shingle and Travessilla soils. Rock outcrop is bare exposure of sandstone. Slickspots are sodium affected areas with crusted surfaces, slow permeability, and barren of vegetation. Navacity soils are moderately fine textured and are associated with Gobernador soils. Shingle and Travessilla soils are shallow.

The Fort Collins loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface is pale brown loam about 2 inches thick. The subsoil is yellowish brown loam about 15 inches thick. The substratum is brown and yellowish brown loam and sandy loam to a depth of 60 inches.

The soil has moderately slow permeability. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 17 inches. Surface runoff is medium. The water erosion hazard and soil blowing hazard are moderate.

The Oelco fine sandy loam is deep and well drained. It formed in alluvium and eolian materials from sedimentary rock. Typically, the surface is light yellowish brown, fine sandy loam about 3 inches thick. The subsoil is brown clay loam about 10 inches thick. The substratum is light yellowish brown loam and sandy loam to a depth of 60 inches.

The soil has moderately slow permeability. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 13 inches. Surface runoff is medium. The water erosion hazard is moderate and the soil blowing hazard is high.

The Gobernador clay loam is deep, well drained, and sodium affected. It formed in alluvium from sedimentary rock. Typically, the surface is brown clay loam about 2 inches thick. The substratum is brown clay to a depth of 60 inches.

The soil has slow permeability. The available water capacity is low to moderate. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 8 inches. Surface runoff is slow. The water erosion hazard is slight, but the soil is highly susceptible to gully erosion and piping due to its high sodium content. The soil blowing hazard is high.

This unit is used for grazing livestock and wildlife habitat.

The potential native plant community on the Fort Collins loam and Oelap fine sandy loam is mainly western wheatgrass, blue grama, galleta, and big sagebrush.

The potential native plant community on the Gobernador clay loam is mainly alkali sacaton, western wheatgrass, fourwing saltbush, and black greasewood.

As the plant community deteriorates on the Fort Collins and Oelap soils, the desirable forage plants diminish and there is an increase in the proportion of broom snakeweed, rubber rabbitbrush, big sagebrush, and annual forbs, which normally occur in small amounts in the potential plant community.

As the plant community deteriorates on the Gobernador soil, there is an increase in the proportion of black greasewood, broom snakeweed, rubber rabbitbrush, annual forbs, and annual grasses.

Grazing management should be implemented that will sustain or increase the vigor, production and reproduction of western wheatgrass, alkali sacaton, fourwing saltbush, and Indian ricegrass.

Adequate residues and litter must be maintained on this soil unit to prevent soil blowing and reduce susceptibility of water erosion.

Planned grazing systems which vary the seasons of grazing and rest in pastures during successive years, combined with proper grazing use will result in a balanced plant community which provides a variety of high quality forage.

This unit is suitable for such range management practices as range seeding, brush management, deferred grazing, and water developments.

The Gobernador soil has limited suitability for ponds and earthen water erosion structures because of high sodium content.

180F--Fruitland-Persayo-Sheppard complex, hills

This complex consists of moderately undulating to hilly soils on upland hills and breaks at elevations of 6,600 to 7,000 feet. Slopes are 5 to 30 percent. The average annual precipitation is about 8 inches and the mean annual air temperature is about 53 degrees F. The frost-free season is 140 to 160 days. The Fruitland sandy loam, 5 to 30 percent slopes, makes up about 40 percent of the complex; the Persayo clay loam, 5 to 30 percent slopes, about 30 percent; and the Sheppard loam, fine sand, 5 to 30 percent slopes, about 25 percent.

The remaining 5 percent of this complex consists of small areas of rock outcrop and shallow soils over sandstone. Rock outcrop is banner sandstone. These inclusions are interspersed throughout the map unit.

The Fruitland sandy loam is deep and well drained. It formed from moderately coarse-textured eolian material from sedimentary rock. Typically, the surface is pale brown sandy loam to about 2 inches thick. The substratum is yellowish brown sandy loam to a depth of 31 inches. Below this, to a depth of 60 inches, is stratified sandy loam and loam, sand.

The soil has moderately rapid permeability. The available water capacity is moderate. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 24 inches. Surface runoff is medium, water erosion hazard is moderate, and the soil blowing hazard is high.

The Persayo clay loam is shallow and well drained. It formed in residuum from sedimentary rock. Typically, the surface is light brownish gray clay loam about 3 inches thick. The substratum is pale olive silty clay loam about 7 inches thick. Below this, at about 10 inches, is weathered shale.

The soil has moderately slow permeability. The available water capacity is very low. The effective rooting depth is about 10 inches. The average annual wetting depth of the soil under native vegetation is about 10 inches. Surface runoff is rapid, the water erosion hazard is high, and the soil blowing hazard is high.

The Sheppard loamy fine sand is deep and excessively drained. It formed in eolian material from sedimentary rock. Typically, the surface is light yellowish brown loamy fine sand about 2 inches thick. The substratum is light yellowish brown, pale brown and grayish brown loamy fine sand to a depth of 60 inches.

The soil has rapid permeability. The available water capacity is low. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 24 inches. Surface runoff is slow, the water erosion hazard is slight, and the soil blowing hazard is very high.

This unit is used for grazing livestock, woodland and wildlife habitat.

The potential native plant community on the Fruitland sandy loam soil is mainly Indian ricegrass, dropseed grasses, needleandthread, and fourwing saltbush. The potential native plant community on the Sheppard loamy fine sand soil is mainly Indian ricegrass, Mormon-tea, dropseed grasses, and sandhill munly. Annual forbs will be present in large amounts during years of above normal moisture. Pinyon pine and oneseed juniper are the dominant trees on the Persayo clay loam soil. The understory vegetation on this soil is mainly galleta, needleandthread, big sagebrush, and Indian ricegrass.

As the plant community deteriorates on the Fruitland sandy loam soil, the desirable forage plants diminish and there is an increase in the proportion of threeawn grasses, broom snakeweed, big sagebrush, and annual forbs, which normally occur in small amounts in the potential plant community.

As the plant community deteriorates on the Sheppard loamy fine sand soil, there is an increase in the proportion of Mormon-tea, rubber rabbitbrush, sandhill muhly, and broom snakeweed.

Grazing management should be implemented that will sustain or increase the vigor, production, and reproduction of Indian ricegrass, giant dropseed, needleandthread, and fourwing saltbush.

Adequate residues and litter must be maintained on the Sheppard and Fruitland soils to prevent soil blowing and damage to young plants.

Planned grazing systems which vary the seasons of grazing and rest in pastures during successive years, result in a balanced plant community, which provides a variety of high quality forage. The Fruitland soil is suitable for such range management practices as fences, earthen structures, planned grazing systems, and pipelines.

Any abnormal disturbance of the Sheppard soil will result in accelerated wind erosion. The Persayo soil has limited suitability for range management practices such as ponds and erosion control structures because of shallow depth of soil. The Persayo component of this complex supports stands of pinyon pine and oneseed juniper. Productivity is low. (Site Index 60, SCS Reg. Bull. No. 71, Albuquerque, NM 1940). The tree stands are self-sustaining and should be managed for multiple uses which include forage and wood production, wildlife, and recreation.

Due to a high erosion hazard and a low understory production, a planned grazing system designed to meet the requirements of both tree and forage production will be beneficial to maintain the woodland for all uses.

031--Gobernador-Fort Collins association, gently sloping

This association consists of nearly level soils on upland valley bottoms and nearly level to gently sloping soils on alluvial fans at elevations of 6,000 to 6,900 feet. Slopes are 0 to 8 percent. The average annual precipitation is about 12 inches, and the mean annual air temperature is about 50 degrees F. The frost-free season is 120 to 150 days. Gobernador silty clay loam, 0 to 2 percent slopes, makes up about 60 percent of this association and is on upland valley bottoms. Fort Collins loam, 2 to 8 percent slopes, makes up about 35 percent and is on alluvial fans.

The remaining 5 percent of this association consists of small areas of Navacuity soils and a moderately coarse-textured soil. Navacuity soils are moderately, fine-textured. These soils are interspersed throughout the unit.

The Gobernador silty clay loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface is pale brown, silty clay loam about 2 inches thick. The substratum is brown clay to a depth of 60 inches.

The soil has slow permeability. The available water capacity is low to moderate. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 8 inches. Surface runoff is slow. The water erosion hazard is slight, but the soil is highly susceptible to gully erosion and piping due to its high sodium content. The soil blowing hazard is high.

The Fort Collins loam is deep and well drained. It formed in alluvium from sedimentary rock. Typically, the surface is brown loam about 2 inches thick. The subsoil is brown clay loam about 16 inches thick. The substratum is brown clay loam to a depth of 60 inches.

The soil has moderately slow permeability. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 18 inches. Surface runoff is medium, and the water erosion hazard and soil blowing hazard are moderate.

This unit is used for grazing livestock and wildlife habitat.

The potential native plant community on the Gobernador silty clay loam soil is mainly alkali sacaton, western wheatgrass, bottlebrush squirreltail, galleta, and black greasewood. The potential native vegetation on the Fort Collins loam soil is mainly western wheatgrass, Indian ricegrass, muttongrass, and big sagebrush.

As the plant community deteriorates on the Gobernador silty clay loam soil, the desirable forage plants diminish and there is an increase in the proportion of big sagebrush, broom snakeweed, black greasewood, and rubber rabbitbrush which normally occur in small amounts in the potential plant community.

As the plant community deteriorates on the Fort Collins soil, there is an increase in the proportion of big sagebrush, rubber rabbitbrush, annual forbs, and broom snakeweed. Grazing management should be implemented that will sustain or increase the vigor, production, and reproduction of western wheatgrass, muttongrass, alkali sacaton, and Indian ricegrass.

Adequate residues and litter must be maintained on this unit to prevent wind erosion and damage to young plants. Planned grazing systems which vary the seasons of grazing and rest in pastures during successive years, result in a balanced plant community which provides a variety of high quality forage.

The unit is suitable for such range management practices as planned grazing systems, deferred grazing, proper grazing use, range seeding, brush management, fences, and access roads.

The Gobernador soil has limited suitability for earthen structures because of the high sodium content of the soil.

090--0elot loam, gently sloping

This deep, well-drained, nearly level to gently sloping soil occupies mesas and plateaus at elevations of 6,200 to 6,800 feet. Slopes are 0 to 8 percent. It formed in alluvium and eolian material from sedimentary rocks. It occupies about 80 percent of the map unit. The average annual precipitation is about 12 inches and the mean annual air temperature is about 50 degrees F. The frost-free season is 120 to 150 days.

Typically, the surface layer is brown loam about 2 inches thick. The subsoil is brown and dark brown clay loam and loam about 28 inches thick. The substratum is brown and light brown loam and sand, loam to a depth of 60 inches.

This soil has moderately slow permeability. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 19 inches. Surface runoff is medium and the water erosion hazard and soil blowing hazard are moderate.

Included in this map unit are small areas of Fort Collins, Travessilla and Shingle soils. Fort Collins soils are brown and occur on upland valleys and alluvial fans. Travessilla and Shingle soils are shallow. These inclusions make up about 20 percent of the map unit and are interspersed throughout it.

This unit is used for grazing livestock, recreation and wildlife habitat.

The potential native plant community on the Oelap loam soil is mainly western wheatgrass, blue grama, galleta, and big sagebrush.

As the plant community deteriorates, the desirable forage plants diminish and there is an increase in the proportion of broom snakeweed, big sagebrush, rubber rabbitbrush, and annual forbs which normally occur in small amounts in the potential plant community. Big sagebrush may dominate the vegetation. Pinyon and juniper readily invade this plant community.

Grazing management should be implemented that will sustain or increase the vigor, production and reproduction of western wheatgrass, Indian ricegrass, galleta, and blue grama.

Adequate residues and litter must be maintained on this soil to prevent soil blowing and damage to young plants.

Planned grazing systems which vary the seasons of grazing and rest in pastures during successive years, together with proper grazing use, will result in a balanced plant community which provides a variety of high quality forage.

This unit is suitable for such range management practices as ponds, pipelines, range seeding, and brush management.

240--Riverwash

These miscellaneous areas consist of nearly level to very gently sloping unstabilized, sandy, silty, clayey or gravelly sediments which are flooded and reworked by water on floodplains, stream and river beds and arroyos at elevations of 6,000 to 6,900 feet. Slopes are 0 to 3 percent. It occupies about 100 percent of the map unit. The average annual precipitation is 8 to 12 inches and the average annual air temperature is 50 to 53 degrees F. The frost-free season is 120 to 160 days.

220--Rock outcrop-Travessilla-Shingle complex, extremely steep

This complex consists of very steep to extremely steep Rock outcrop and soils on cliffs, breaks and ledges at elevations of 6,100 to 7,200 feet. Slopes are 30 to 100 percent. The average annual precipitation is about 12 inches and the mean annual air temperature is about 50 degrees F. The frost-free season is 120 to 150 days. The Rock outcrop, 40 to 100 percent slopes, makes up about 40 percent of the complex, the Travessilla sandy loam, 30 to 40 percent slopes, about 30 percent, and the Shingle silty clay loam, 30 to 40 percent slopes, about 20 percent.

The remaining 10 percent of the complex consists of small areas of badlands and rubble at the toe of slopes. Badland is barren deposits of shale. These inclusions are interspersed throughout the map unit.

Rock outcrop is exposed barren sandstone.

The Travessilla sandy loam is shallow and well drained. It formed in residuum from sedimentary rock. Typically, the surface is light yellowish brown sandy loam about 2 inches thick. The substratum is light yellowish brown sandy loam about 8 inches thick. Below this, at about 10 inches, is sandstone.

The soil has moderately rapid permeability. The available water capacity is very low. The effective rooting depth is about 10 inches. The average annual wetting depth of the soil under native vegetation is about 10 inches. Surface runoff is rapid and the water erosion hazard and soil blowing hazard are high.

The Shingle silty clay loam is shallow and well drained. It formed in residuum from sedimentary rock. Typically, the surface is light brownish gray silty clay loam about 1 inch thick. The substratum is light brownish gray silty clay loam about 7 inches thick. Below this, at about 8 inches, is shale.

The soil has moderate permeability. The available water capacity is very low. The effective rooting depth is about 8 inches. The average annual wetting depth of the soil under native vegetation is about 8 inches. Surface runoff is very rapid, the water erosion hazard is very high and the soil blowing hazard is high.

This unit is used for grazing livestock, woodland, recreation, and wildlife habitat.

Pinyon pine and oneseed juniper are the dominant trees on this unit. The understory vegetation on this unit is mainly galleta, blue grama, Indian ricegrass, and mountainmahogany.

The understory vegetation can be safely grazed by domestic livestock and wildlife when principles of proper grazing use are applied. The Travessilla and Shingle components of this complex support natural stands of pinyon and oneseed juniper. The site index of Shingle soil is 80. The site index of Travessilla soil is 70. (SCS Reg. Bulletin No. 71, Albuquerque, NM, 1940). Tree stands on the Shingle soil will yield approximately 13 cords per acre when the stand averages 5 inches in diameter at 1 foot above the ground. Travessilla soil will yield about 11 cords per acre when the stand averages 5 inches in diameter at 1 foot above ground level. The stands are self-sustaining and should be managed for multiple uses including forage and wood production, wildlife and recreation.

Spot clearing, strip clearing, or thinning will increase the understory forage production of grasses, shrubs, and forbs.

These soils have limited suitability for mechanical practices due to shallow depth.

110--Travessilla-Shingle-Oelop association, moderately steep

This association consists of nearly level to gently sloping soils on mesas and plateaus and nearly level to moderately steep soils on upland hills, breaks and mesas at elevations of 6,100 to 7,200 feet. Slopes are 0 to 30 percent. The average annual precipitation is about 12 inches and the mean annual air temperature is about 50 degrees F. The frost-free season is 120 to 150 days. The Travessilla sandy loam, 0 to 30 percent slopes, makes up about 45 percent of the association and occupies upland hills, breaks and mesas. The Shingle clay loam, 0 to 30 percent slopes, makes up about 25 percent and occupies upland hills, breaks and mesas. The Oelop loam, 0 to 8 percent slopes, makes up about 15 percent and occupies mesas and plateaus.

The remaining 15 percent of this association consists of small areas of Rock outcrop, Fort Collins, and Navacity soils. Rock outcrop consists of bare exposures of sandstone bedrock. Fort Collins soils are brown and have a thin solum and occur in upland valley bottoms and alluvial fans. Navacity soils do not have an argillic horizon and occur in dissected drainageways in valley bottoms. These soils are interspersed throughout the map unit.

The Travessilla sandy loam is shallow and well drained. It formed in residuum from sedimentary rock. Typically, the surface layer is pale brown sandy loam about 1 inch thick. The substratum is pale brown and light yellowish brown sandy loam to about 15 inches. Below this, at a depth of 15 inches, is sandstone.

The soil has moderately rapid permeability. The available water capacity is very low. The effective rooting depth is about 15 inches. The average annual wetting depth of the soil under native vegetation is about 15 inches. Surface runoff is medium to rapid and the water erosion hazard is moderate to high and the soil blowing hazard is high.

The Shingle clay loam is shallow and well drained. It formed in residuum from sedimentary rock. Typically, the surface layer is grayish brown clay loam about 3 inches thick. The substratum is grayish brown clay loam to about 10 inches. Below this, at a depth of 10 inches, is weathered shale.

The soil has moderate permeability. The available water capacity is very low. The effective rooting depth is about 10 inches. The average annual wetting depth of the soil under native vegetation is about 10 inches. Surface runoff is medium to rapid and the water erosion hazard is moderate to high and the soil blowing hazard is high.

The Oelap loam is deep and well drained. It formed in alluvium and eolian material from sedimentary rock. Typically, the surface layer is brown and reddish brown silt loam about 4 inches thick. The subsoil is reddish brown and brown silty clay loam about 10 inches thick. The substratum is brown, strong brown and light brown silty clay loam to about 60 inches.

The soil has moderately slow permeability. The available water capacity is high. The effective rooting depth is about 60 inches. The average annual wetting depth of the soil under native vegetation is about 24 inches. Surface runoff is medium and the water erosion hazard is moderate. The soil blowing hazard is moderate.

This unit is used for grazing livestock, recreation, wood land, and wildlife habitat.

The potential native plant community on the Oelap soil is mainly western wheatgrass, blue grama, galleta, and big sagebrush. As the plant community deteriorates, the desirable forage plants diminish and there is an increase in the proportion of broom snakeweed, big sagebrush, rubber rabbitbrush, and annual forbs which normally occur in small amounts in the potential plant community.

Pinyon pine and oneseed juniper are the dominant trees on the Travessilla and Shingle soils. The understory vegetation is mainly muttongrass, galleta, blue grama, and mountainmahogany.

Grazing management should be implemented that will sustain or increase the vigor, production and reproduction of Indian ricegrass, western wheatgrass, galleta, and mountainmahogany.

Adequate residues and litter must be maintained on this unit to prevent soil blowing and damage to young plants.

Planned grazing systems which vary the seasons of grazing and rest in pastures during successive years result in a balanced plant community which provides a variety of high quality forage. The Oelap soil is suitable for such range management practices as ponds, fences, earthen structures, planned grazing systems, range seeding, and brush management.

The Travessilla and Shingle soils support natural stands of piñon andoneseed juniper. The site index of Shingle soil is 80. The site index of Travessilla soil is 70. (SCS Reg. Bulletin No. 71, Albuquerque, N.M., 1940). Tree stands on the Shingle soil will yield approximately 13 cords per acre when the stand averages 5 inches in diameter and 1 foot above the ground. Travessilla soil will yield about 11 cords per acre when the stand averages 5 inches in diameter and 1 foot above ground level. The tree stands are self-sustaining and should be managed for multiple uses including forage, wood production, wildlife, and recreation.

These soils are suitable for spot clearing, strip clearing, or thinning which will increase the understory forage production of grasses, shrubs, and forbs.

The Travessina soil is not suitable for ponds, pipelines, and earthen structures due to shallow depth of soil.

Badland

This miscellaneous area consists of nonstony, barren land dissected by many intermittent drainage channels entrenched in soft shale on upland canyons, valleys, ridges, hills, and breaks. Slope is 5 to 80 percent. Elevation is 6,800 to 7,200 feet. The average annual precipitation is 8 to 12 inches. The average annual air temperature is 50 to 53 degrees F, and the frost-free season is 120 to 160 days.

Reference location of badland is southwest corner of sec. 29, T. 23 N., R. 7 W.

Binton Series

The Binton series is classified as Typic Torrifuvents, fine loamy, mixed (Calcareous), mesic. These deep, well drained soils formed in alluvium derived mainly from shale and sandstone and are on upland valley bottoms and floodplains. Slope is 0 to 3 percent. Elevation is 6,000 to 6,900 feet. The average annual precipitation is 8 inches. The average annual air temperature is 53 degrees F, and the frost-free season is 140 to 160 days.

Typical pedon of Binton silt loam, from an area of Binton-Council-Bluffs association, gently sloping, 7,919 feet north, 2,866 feet east of the northeast corner of sec. 1, T. 23 N., R. 7 W.

A1--0 to 2 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine continuous pores; moderately alkaline; clear smooth boundary.

C1--2 to 7 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine continuous pores; moderately alkaline; clear smooth boundary.

C2--7 to 20 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; few very fine continuous pores; slightly effervescent with disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

C3--20 to 31 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, sticky and plastic; slightly effervescent with disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

C4--31 to 40 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; massive; soft, very friable, sticky and plastic; moderately alkaline; clear smooth boundary.

C5--40 to 50 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; moderately alkaline; clear smooth boundary.

C6--50 to 60 inches; brown (10YR 5/3) clay, brown (10YR 5/3) moist; massive; hard, friable, sticky and plastic; slightly effervescent with disseminated calcium carbonate; moderately alkaline.

Depth to bedrock is greater than 60 inches.

The A horizon has textures of silt loam or clay loam. It has value of 5 through 7 dry, 4 or 5 moist, and chroma of 2 through 4.

The C horizon has textures of clay loam, silty clay loam, silt loam or sand, clay loam. Clay, fine sandy loam, silt loam or very fine sand, loam textures sometimes occur below the control section or as thin lenses within it. Value is 5 through 7 dry, 4 or 5 moist, and chroma is 2 through 4.



CONFIDENTIAL

THE BINTON SERIES CONSISTS OF DEEP, WELL DRAINED, BALANCE ALKALI SOILS FORMED IN ALLUVIUM DERIVED FROM SANDSTONE AND SHALE IN WYATT VALLEY. SOILS ARE FLOODED. ELEVATIONS RANGE 600 TO 700 FEET, M. A P. IS 1 TO 10 INCHES. CLAY IS SILT TO SS' & AND THE FROST FREE SEASON IS 140 TO 160 DAYS. TYPICALLY, THE SURFACE IS PINK BROWN SILT LOAM 2 INCHES THICK. THE SUBSTRATUM TO A DEPTH OF 50 INCHES IS BROWN, YELLOWISH BROWN, AND PALE BROWN CLAY LOAM. SILT CLAY LOAM AND SANDY CLAY LOAM. BELOW THIS TO A DEPTH OF 60 INCHES, IT IS BROWN CLAY SILT. BELOW FROM 2 TO 3 PERCENT.

FOOTNOTES	REGIONAL INTERPRETATIONS	50

CAMP AREAS	NONE, POOR, SLT MODERATE - DUSTY, EXCESS SALT	PLAYGROUNDS	0-2% SLT MODERATE - DUSTY, EXCESS SALT
	NONE, POOR, CLT MODERATE - EXCESS SALT		2-4% SLT MODERATE - DUSTY, EXCESS SALT
PICKNICK AREAS	RARE SE. ERE - FLOODS		0-2% CLT MODERATE - EXCESS SALT
	SLT MODERATE - DUSTY, EXCESS SALT		2-4% CLT MODERATE - EXCESS SALT, SLOPE
	CLT MODERATE - EXCESS SALT		SLT SEVERE - ERODES EASILY
			CLT SLIGHT

CAPACITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)																
CLASS- DETERMINING PHASE	CAPACITY		CORN		SUGAR BEET		WHEAT		BARLEY		RICE		PASTURE		FOREST	
	NO.	YR.	NO.	YR.	NO.	YR.	NO.	YR.	NO.	YR.	NO.	YR.	NO.	YR.	NO.	YR.
ALL	73															

CLASS- DETERMINING PHASE	USE SOIL	WETLAND CHARACTERISTICS					POTENTIAL PRODUCTIVITY		TREES TO PLANT
		SHALLOWS	WETLAND	SHALLOW	WETLAND	FLAT	COMMON TREES	SOIL INDEX	
							ALICE		

CLASS- DETERMINING PHASE	USE SOIL	WETLAND CHARACTERISTICS					POTENTIAL PRODUCTIVITY		TREES TO PLANT
		SHALLOWS	WETLAND	SHALLOW	WETLAND	FLAT	COMMON TREES	SOIL INDEX	

CLASS- DETERMINING PHASE	USE SOIL	WETLAND CHARACTERISTICS					POTENTIAL PRODUCTIVITY		TREES TO PLANT
		SHALLOWS	WETLAND	SHALLOW	WETLAND	FLAT	COMMON TREES	SOIL INDEX	
ALL		V. POOR	V. POOR	POOR			POOR	V. POOR	

COMMON PLANT NAME	PLANT SYMBOL	PERCENTAGE COVER ON DRY WEIGHT BY CLASS DETERMINING PHASE									
		ALICE									
ALKALI SAGE	SA										
GALLET	GA										
INLAND SALTGRASS	IS										
BLACK GREASEWOOD	BG										
ANNUAL NATIVE POPE	AN										
OTHER PERENNIAL GRASSES	OP										
OTHER SHRUBS	OS										
POTENTIAL PRODUCTION (LBS./AC. DRY WT.)											
FAVORABLE YEARS		1000									
NORMAL YEARS		700									
UNFAVORABLE YEARS		400									

FOOTNOTES											
1	SALT FLATS RARELY DRY IN W. & N. 1/2										

Blancot Series

The Blancot series is classified as Typic Haplargids, fine-loam, mixed, mesic. These deep, well drained soils formed in alluvium derived mainly from shale and sandstone and are on alluvial fans. Slope is 2 to 8 percent. Elevation is 6,600 to 7,000 feet. The average annual precipitation is 8 inches. The average annual air temperature is 53 degrees F, and the frost-free season is 140 to 160 days.

Typical pedon of Blancot fine sandy loam, from an area of Blancot-Councilor-Binton association, gently sloping, 1,360 feet north and 2,02 feet east of the southwest corner of sec. 32, T. 22 N., R. 6 W.

A1--0 to 2 inches; light yellowish brown (10YF 6/4) fine sandy loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable; few very fine and fine roots; few very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

B1--2 to 7 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, very friable; common fine and medium roots; common very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

E2t--7 to 15 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine and fine continuous pores; few thin clay films on faces of peds; moderately alkaline; clear smooth boundary.

B3ca--15 to 21 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine continuous pores; few thin clay films on faces of peds; strongly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1ca--21 to 28 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable; few very fine and fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear gradual boundary.

C2ca--28 to 38 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear gradual boundary.

C3ca--35 to 60 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 5/3) moist; massive; slightly hard, friable; strongly effervescent with disseminated calcium carbonate; strongly alkaline.

Depth to bedrock is greater than 60 inches. Thickness of the solon is 10 to 28 inches.

The A horizon has textures of fine sandy loam, loam and sandy loam. It has value of 6 or 7 dry, 5 or 4 moist, and chroma of 3 or 4.

The B horizon has textures of sandy clay loam, clay loam or loam. It has hue of 7.5YR or 10YR, value of 4 through 6 dry, 4 or 5 moist, and chroma of 2 through 4.

The C horizon has textures of sandy loam or fine sandy loam. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 through 4. Thin strata of silt loam, sandy clay loam, and loamy sand occur within the C horizon.

SOIL INTERPRETATIONS RECORD

MLRA S1 3 STATE NEW MEXICO RECORD NO KIND OF UNIT SEPTES UNIT NAME BLANCO
 CLASSIFICATION AND BRIEF SOIL DESCRIPTION AUTHOR(S) JEK DATE 1/79 REVISED UNIT MODIFIER SANDY SUBSTRATUM

THE BLANCO SERIES CONSISTS OF DEEP, WELL DRAINED SOILS FORMED IN ALLUVIAL DEPOSITS FROM SANDSTONE AND SHALE OR ALLUVIAL
 FANS. ELEVATIONS RANGE FROM 1,000 TO 2,000 FEET. M.A.P. IS 2 TO 10 INCHES. M.A.A.T. IS 61 TO 55 INCHES. AND THE FROST FREE SEASON
 IS 140 TO 160 DAYS. TYPICALLY, THE SURFACE IS LIGHT YELLOWISH BROWN FINE SANDY LOAM 2 INCHES THICK. THE SUBSOIL IS PALE
 BROWN AND BROWN SANDY CLAY LOAM AND CLAY LOAM 19 INCHES THICK. THE SUBSTRATUM IS YELLOWISH BROWN, LIGHT YELLOWISH BROWN
 AND PALE BROWN SANDY LOAM TO A DEPTH OF 60 INCHES. SLOPE RANGE FROM 2 TO 5 PERCENT.

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACTION > 3/4" - 1/2"	PERCENT OF MATERIAL LESS THAN 3/4" PASSING SIEVE				LIQUID LIMIT	PLASTICITY INDEX
					4	10	40	200		
0-2	SL	SM, SM-SC	A-2, A-4	0	100	100	65-70	30-40	20-25	10-15
2-2	FSL	SM, SM-SC, M, CL-M	A-4	↓	↓	↓	70-85	40-55	↓	↓
2-2	L	ML, CL-ML	A-4	↓	↓	↓	85-95	45-75	25-35	5-10
2-21	SC, CL, L	SC, CL	A-6, A-7	↓	↓	↓	85-95	45-75	30-45	10-20
21-60	SL, FSL	SM, SM-SC	A-2, A-4	↓	↓	↓	65-80	30-50	20-25	10-15

DEPTH (IN.)	CLAY (PCT OF <2µ)	MOIST. BLOCK DENSITY (G./CM ³)	PERME- ABILITY (IN/HR)	AVAIL. CAP. WATER CAPACITY (IN/IN)	SOIL REACTION (pH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS		WIND EROSION GRADE	ORGANIC MATTER (PCT)	COMPRESSIBILITY	
								K	T			STIFF	LOW
SAVE DEPTH AS ABOVE	8-17		2.0-6.0	0.11-0.13	7.9-8.4	2-4	LOW	20	5	3	2-3	HIGH	LOW
	10-17		↓	0.13-0.15	↓	↓	↓	24	↓	↓	↓		
	18-27		0.6-2.0	0.16-0.18	↓	↓	↓	28	↓	5	↓		
	18-35		0.2-2.0	0.14-0.21	7.9-8.4	↓	MODERATE	↓					
	8-17		2.0-6.0	0.11-0.15	7.9-9.0	↓	LOW	24					

FLOODING			HIGH WATER TABLE			CEMENTED FAN		BENCH MARK		SUBSIDIARY		HYDROLOGICAL OFF	POTENTIAL FLOOD ACTION
FREQUENCY	DURATION	WENT	DEPTH (FT)	PH	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INITIAL (IN)	TOTAL (IN)		
NONE			7.60					7.60				8	LOW

FOOTNOTES				SANITARY FACILITIES				FOOTNOTES				CONSTRUCTION MATERIAL			
				SLIGHT								GOOD			
				2-7% SEVERE - SEEPAGE 7-9% SEVERE - SEEPAGE, SLOPE								IMPROBABLE - EXCESS FINES			
				SLIGHT								IMPROBABLE - EXCESS FINES			
				SLIGHT								MODERATE - TOO CLAYEY			
				GOOD											

FOOTNOTES				WATER MANAGEMENT			
				SEVERE - SEEPAGE			

FOOTNOTES				BUILDING SITE DEVELOPMENT			
				SLIGHT			
				MODERATE - SHRINK-SWELL			
				MODERATE - SHRINK-SWELL			
				2-4% MODERATE - SHRINK-SWELL 4-8% MODERATE - SHRINK-SWELL SLOPE			
				MODERATE - SHRINK-SWELL			
				2-3% SL, FSL SOIL BLOWING 3-5% SL, FSL SOIL BLOWING, SLOPE 2-3% L; FAVORABLE 3-5% L; SLOPE			
				SL, FSL: SOIL BLOWING L: FAVORABLE			
				FAVORABLE			

FOOTNOTES				REGIONAL INTERPRETATIONS			

UNIT NAME: **Blanco** RECREATIONAL DEVELOPMENT
 UNIT MODIFIER: **SANDY SUBSTRATUM**

FOOTING: **2-6% MODERATE SLOPE**
6+% SEVERE SLOPE

CAMP AREAS: **SLIGHT**

PICNIC AREAS: **SLIGHT**

PLAYGROUNDS: **SLIGHT**

PATHS AND TRAILS: **SLIGHT**

CAPACITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)																
CLASS- DETERMINING PHASE	CAPACITY															
	N	IR	NFE	IRF	NFE	IRF	NFE	IRF	NFE	IRF	NFE	IRF	NFE	IRF	NFE	IRF
ALL	75															

CLASS DETERMINING PHASE	CHL S+M	MANAGEMENT					POTENTIAL		TREES TO PLANT
		EROSION HAZARD	EC S+M	SEEDING MATERIAL	WATER HAZARD	PLANT COMPET	COMMON TREES	S+M INDEX	
							NONE		
								</	

CLASS- DETERMINING PHASE	CHL SYM	POTENTIAL		SPECIES
		EROSION HAZARD	EC SYM	

CLASS- DETERMINING PHASE	POTENTIAL FOR HABITAT FOR									
	GRASS S	SHRUBS S	WETLAND S	SHALLOW WATER	OPENLAND S	WOODLAND S	WETLAND S	SHALLOW WATER	OPENLAND S	WOODLAND S
ALL	V. POOR	V. POOR	POOR	-	-	POOR	POOR	V. POOR	V. POOR	-

COMMON PLANT NAME	PLANT SYMBOL	POTENTIAL FOR HABITAT FOR									
		GRASS S	SHRUBS S	WETLAND S	SHALLOW WATER	OPENLAND S	WOODLAND S	WETLAND S	SHALLOW WATER	OPENLAND S	WOODLAND S
INDIAN RICEGRASS	GR1										
GALLET	H12										
BLUE GRASS	BOG2										
BIG SAGEBRUSH	ART2										
ANNUAL NATIVE FORB	AAFF										
OTHER PERENNIAL GRASSES	PPGG										
OTHER SHRUBS	SSSS										

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																						
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1. THE SOIL MATERIAL BELOW 2.1 INCHES HAS A "POOR" RATING.

2. 1.0 CM. SANDY SILT. NO. 1.0. NO. 3.7.

Councilor Series.

The Councilor series is classified as Typic Torrifuvents, coarse loamy, mixed (nonacid), mesic. These deep, well drained soils formed in alluvium derived mainly from shale and sandstone and are on upland valley bottoms and alluvial fans. Slope is 0 to 8 percent. Elevation is 6,000 to 6,900 feet. The average annual precipitation is 8 inches. The average annual air temperature is 53 degrees F, and the frost-free season is 140 to 160 days.

Typical pedon of Councilor sandy loam, from an area of Binton-Councilor-Lytrock association, gently sloping, 2,400 feet south and 60 feet west of the northeast corner of sec. 3, T. 23 N., R. 6 W.

A1--0 to 2 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable; few very fine and fine roots; many very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

C1--2 to 6 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable; few fine and medium roots; many fine and medium continuous pores; moderately alkaline; clear smooth boundary.

C2--6 to 24 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable; few very fine and fine roots; few very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

C3--24 to 38 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable; strongly alkaline; clear smooth boundary.

C4--38 to 60 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable; strongly alkaline.

Depth to bedrock is greater than 60 inches.

The A horizon has textures of sandy loam or fine sandy loam. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 through 4.

The C horizon has textures of sandy loam or fine sandy loam. The strata of loam, loamy sand or sand may occur within the profile. It has hue of 10YR or 2.5Y, value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 through 4.



SOIL INTERPRETATIONS RECORD

MLRA(S) 37 KIND OF UNIT SERIES UNIT NAME COUNCELOR
 STATE NEW MEXICO RECORD NO. 425 AUTHOR(S) LEE DATE 7-79 REVISED UNIT MODIFIER
 CLASSIFICATION AND BRIEF SOIL DESCRIPTION

THE COUNSELOR SERIES CONSISTS OF DEEP WELL DRAINAGE SOILS THAT FORMED IN ALLUVIUM DERIVED FROM SANDSTONE AND SHALE IN UPLAND VALLEY BOTTOMS AND ON FANS. ELEVATION IS 6900 TO 7000 FEET. A.H.T. IS 51 TO 55 F. A.H.P. IS 0 TO 10 F. A.H.S. IS 0 TO 10 F. FREE SEASON IS 142 TO 160 DAYS. TYPICALLY THE SURFACE LAYER IS PALE BROWN SANDY LOAM ABOUT 2 INCHES THICK. THE SUBSTRATUM IS BROWN, LIGHT YELLOWISH BROWN OR BROWN SANDY LOAM TO A DEPTH OF 40 INCHES OR MORE. SLOPE RANGES FROM 0 TO 5 PERCENT.

FOOTNOTE		ESTIMATED SOIL PROPERTIES								
DEPTH (IN)	USDA TEXTURE	UNIFIED	AASHTO	FRACT. > 3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3 IN. PASSING S.F.F.				LIQ. C LIMIT	PL. C LIMIT
					#	10	40	60		
0-2	SL, FL	SM	A-2, A-4	0	100	100	60-75	30-50	< 25	15-20
0-2	L	ML	A-4	0	100	100	55-95	60-75	< 25	15-20
2-60	FSL, L, SL	SM, ML, CL-ML, SM-SC	A-2, A-4	0	100	100	45-90	30-50	< 25	15-20

DEPTH (IN)	CLAY (PCT OF < 2MM)	MOIST BULK DENSITY (G/CM ³)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOL. REACTION (pH)	SALINITY (MMH/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTOR (P, T)	WIND EROD. GROUP	ORGANIC MATTER (PCT)	COMPROSITY	
8-17	-	-	20-60	0.2-0.14	7.9-8.4	< 2	LOW	.25 S	3	2-5	HIGH	LOW
8-17	-	-	20-60	0.2-0.7	7.9-8.4	< 2	LOW	.32 S	5	2-5	HIGH	LOW
8-17	-	-	20-60	0.2-0.14	7.9-9.0	2-4	LOW	.32				

FLOODING			H ₂ O WATER TABLE			CEMENTED FAN		BEDROCK		SUBSIDENCE		HYD. CAP.	POTENTIAL FRACT. ACTION
FREQUENCY	DURATION	MIN. H ₂ O	DEPTH (FT)	KIND	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INITIAL (IN)	TOTAL (IN)		
NOTE			> 60					> 60					

FOOTNOTES		SANITARY FACILITIES		KEYING ONLY	FOOTNOTES		CONSTRUCTION MATERIAL	
SEPTIC TANK ABSORPTION FIELD	SLIGHT			FILL 19			FAIR	
SEWAGE LAGOON	SEVERE - SEEPAGE			SAND 2			IMPROBABLE - EXCESS FINES	
SANITARY LANDFILL (TRENCH)	SEVERE - SEEPAGE			GRAVEL 3			IMPROBABLE - EXCESS FINES	
SANITARY LANDFILL (AREA)	SEVERE - SEEPAGE			SOIL 2			GOOD	

FOOTNOTES		BUILDING SITE DEVELOPMENT		KEYING ONLY	FOOTNOTES		WATER MANAGEMENT	
DAILY COVER FOR LANDFILL	GOOD			POND 23			SEVERE - SEEPAGE	

FOOTNOTES		BUILDING SITE DEVELOPMENT		KEYING ONLY	FOOTNOTES		WATER MANAGEMENT	
SHALLOW EXCAVATIONS	SLIGHT			DICES 24			SEVERE - PIPING	
DWELLINGS WITHOUT BASEMENTS	SLIGHT			POND 25			SEVERE - DEEP TO WATER	
DWELLINGS WITH BASEMENTS	SLIGHT			DRAIN 26			DEEP TO WATER	
SMALL COMMERCIAL BUILDINGS	0-4% : SLIGHT 4+% : MODERATE			IRRIG 27			2-3 : SOIL BLOWING 3+% : SOIL BLOWING, SEVERE	
LOCAL ROADS AND STREETS	MODERATE - LOW STRENGTH			TERRAC 28			SOIL BLOWING	
LAWNS, LANDSCAPING, AND GOLF FAIRWAYS				WATER 29			FAVORABLE	

FOOTNOTES		REGIONAL INTERPRETATIONS	

Doak Series

The Doak series is classified as Typic Haplargids, fine-loam, mixed, mesic. These deep, well drained soils formed in alluvium and eolian materials derived mainly from shale and sandstone and are on mesas and plateaus. Slope is 0 to 5 percent. Elevation is 6,600 to 7,000 feet. The average annual precipitation is 8 inches. The average annual air temperature is 53 degrees F, and the frost-free season is 140 to 160 days.

Typical pedon of Doak fine sandy loam, from an area of Doak-Sniprock association, gently sloping, 800 feet south and 1,400 feet west of the northeast corner of sec. 29, T. 22 N., R. 6 W.

A1--0 to 5 inches; light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable; few very fine roots; few very fine continuous pores; moderately alkaline; clear smooth boundary.

B21t--5 to 11 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium fine roots; common very fine and fine continuous pores; few thin clay films on faces of peds; moderately alkaline; clear smooth boundary.

B22t--11 to 17 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; common fine and medium roots; common very fine and fine continuous pores; few thin clay films on faces of peds; moderately alkaline; clear smooth boundary.

B3ca--17 to 24 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine roots; few very fine and fine continuous pores; strongly effervescent with disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

C1ca--24 to 31 inches; very pale brown (10YR 7/3) clay loam, pale brown (10YR 6/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine roots; violently effervescent with disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

C2ca--31 to 44 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; massive; very hard, firm, slightly sticky and slightly plastic; few very fine roots; violently effervescent with disseminated calcium carbonate; strongly alkaline; clear gradual boundary.

C3ca--44 to 60 inches; very pale brown (10YR 7/4) silt loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable; slightly sticky and slightly plastic; violently effervescent with disseminated calcium carbonate; strongly alkaline.

The solum ranges from 17 to 55 inches in thickness. Depth to bedrock is greater than 60 inches.

The A horizon has textures of fine sandy loam, loam, or clay loam. It has hue of 7.5YR or 10YR, value is 4 through 6 dry, 3 through 5 moist, and chroma of 2 through 4.

The B horizon has textures of loam, sandy clay loam, or clay loam. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 3 or 4.

The C horizon has texture of loam, sandy clay loam, clay loam or silt loam. It has hue of 7.5YR or 10YR, value of 5 through 7 dry, 4 through 6 moist, and chroma of 3 or 4.

MRA(S): 37

REV. MEB, 1-78, 34

DGAK SERIES

TYPIC MAPLARGIDS, FINE-LOAMY, MIXED, MESIC

THE DGAK SERIES CONSISTS OF DEEP, WELL DRAINED SOILS, FORMED IN MIXED ALLUVIUM OF EOLIAN MATERIAL ON MESAS TOP. ELEVATION RANGE 5400 TO 6200 FEET. MEAN ANNUAL PRECIPITATION IS 6 TO 10 INCHES. MEAN ANNUAL AIR TEMPERATURE IS 51 TO 59 AND THE FROST FREE PERIOD IS 140 TO 160 DAYS. TYPICALLY THE SURFACE LAYER IS A BROWN LOAM ABOUT 5 INCHES THICK. SUBSOIL IS BROWN CLAY LOAM ABOUT 36 INCHES THICK AND THE SUBSTRATUM IS A CALCAREOUS CLAY LOAM TO 60 INCHES OR MORE. SLOPES RANGE FROM 0 TO 8 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	PERCENT OF MATERIAL LESS NO. 10, 20, 40, 60, 100				LIQUID LIMIT	PLAS- TICITY
0-5	CL	ML	A-6	100	100	80-95	60-75	<30	NP-5
0-5	FSL	SM, ML	A-4	100	100	60-85	40-60	<30	NP-5
0-5	CL	CL, CL-ML	A-6, A-4	100	100	90-100	65-80	25-40	5-20
5-69	CL, SILT. L	CL, CL-ML	A-6, A-4	100	100	80-100	60-80	25-40	5-20

DEPTH (IN.)	CLAY (%)	MOISTURE DENSITY	PERME- ABILITY	AVAILABLE WATER CAPACITY	SOIL REACTION	SALINITY (MMH-S/CM)	SHRINK- SWELL	EROSION FACTOR	WIND EROD.	ORGANIC MATTER	CORROSIVITY
0-5	15-27	-	0.0-0.2	0.15-0.17	7.4-8.4	<2	LOW	0.37	5	5	0.5-0.6
0-5	10-20	-	0.0-0.0	0.11-0.14	7.4-8.4	<2	LOW	0.21	5	3	0.5-0.7
0-5	27-30	-	0.2-0.6	0.15-0.18	7.4-8.4	<2	MODERATE	0.32	5	6	0.5-0.6
5-69	25-35	-	0.2-0.6	0.15-0.18	7.4-9.0	2-4	MODERATE	0.37			

FLOODING		WATER TABLE		GROUNDED EMB.		EROSION		CORROSION		HYDRO- POTENTIAL	
FREQUENCY	DURATION	DEPTH	KIND	MONTHS	DEPTH	HARDNESS	DEPTH	HARDNESS	INIT.	TOTAL	FROST
NONE		2-12					2-12				LOW

SANITARY FACILITIES

CONSTRUCTION MATERIAL

SEPTIC TANK ABSORPTION FIELDS	SEVERE-PODS SLOWLY	ROADFILL	POOR-LOW STRENGTH
SEWAGE LAGOON AREAS	0-2%: SLIGHT 2-7%: MODERATE-SLOPE 7-12%: SEVERE-SLOPE	SAND	UNSUITE
SANITARY LANDFILL (TRENCH)	MODERATE-TOO CLAYEY	GRAVEL	UNSUITE
SANITARY LANDFILL (AREA)	SLIGHT	TOPSOIL	FAIR-TOO CLAYEY
DAILY COVER FOR LANDFILL	FAIR-TOO CLAYEY	POND RESERVOIR AREA	0-2%: FAVORABLE 6-12%: SLOPE

FLOODING SITE DEVELOPMENT

SHALLOW EXCAVATIONS	SLIGHT	EMBANKMENTS DAMS AND LEVEES	FAVORABLE
DWELLINGS WITHOUT BASEMENTS	MODERATE-SHRINK-SWELL, LOW STRENGTH	EXCAVATED POND AQUIFER FED	NO WATER
DWELLINGS WITH BASEMENTS	MODERATE-SHRINK-SWELL, LOW STRENGTH	DRAINAGE	0-2%: FAVORABLE 2-12%: SLOPE
SMALL COMMERCIAL BUILDINGS	0-4%: MODERATE-SHRINK-SWELL, LOW STRENGTH 4-12%: MODERATE-SHRINK-SWELL, LOW STRENGTH, SLOPE	IRRIGATION	0-2%: FAVORABLE 2-12%: SLOPE
LOCAL ROADS AND STREETS	SEVERE-LOW STRENGTH	TERRACES AND DIVERSIONS	FAVORABLE
LAUNDS, LANDSCAPING AND GOLF FAIRWAYS		GRASSED WATERWAYS	FAVORABLE

REGIONAL INTERPRETATIONS

Fort Collins Series

The Fort Collins series is classified as Ustollic Haplargols, fine-loamy, mixed, mesic. These deep, well drained soils formed in alluvium derived mainly from shale and sandstone and are on alluvial fans. Slope is 2 to 8 percent. Elevation is 6,000 to 6,800 feet. The average annual precipitation is 12 inches. The average annual air temperature is 50 degrees F, and the frost free season is 120 to 150 days.

Typical pedon of Fort Collins loam, from an area of Fort Collins-Navacuity association, gently sloping, 1,407 feet south, 886 feet west of the northeast corner of sec. 9., T. 29 N., R. 7 W.

A1--0 to 3 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable; few very fine roots; few very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

B1--3 to 5 inches; brown (10YR 5/3) clay loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

E2t--5 to 15 inches; pale brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and medium roots; few fine continuous pores; few thin clay films on faces of peds; moderately alkaline; clear smooth boundary.

C1ca--15 to 35 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable; few very fine roots; few fine continuous pores; strongly effervescent with disseminated calcium carbonates; moderately alkaline; clear smooth boundary.

C2ca--35 to 40 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; soft, very friable; few very fine roots; few fine continuous pores; strongly effervescent with disseminated calcium carbonates; moderately alkaline; clear smooth boundary.

C3ca--40 to 60 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable; few fine roots; few fine continuous pores; strongly effervescent with disseminated calcium carbonates; strongly alkaline.

Depth to bedrock is greater than 60 inches. Thickness of the solum is 15 to 30 inches.

The A horizon has textures of sandy loam, loam, and clay loam. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 through 4.

The B horizon has textures of clay loam or loam. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 through 4.

The C horizon has textures of sandy loam, sandy clay loam, and fine sandy loam. Strata of clay loam and silty clay loam occur within the substratum. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 through 4.

SOIL INTERPRETATIONS RECORD

MLRA S: 3 RECORD NO: 10/72 KIND OF UNIT: SERIES UNIT NAME: FOOT COLLIS
 STATE: COLORADO AUTHOR(S): JER DATE: 10/72 REVISED: UNIT MODIFIER SANDY SUBSTRATUM
 CLASSIFICATION AND BRIEF SOIL DESCRIPTION:

THE TOPSOIL SERIES CONSISTS OF DEEP, WELL DRAINER SOILS FORMED IN ALLUVIUM DERIVED FROM SANDSTONE AND SHALE ON HILL-
 LAND, MOUNTAINS AND ALLUVIAL FAN. DEPTH TO BEDROCK 2000 TO 4000 FEET. M.A.P. IS 10 TO 13 INCHES. M.A.A.T. IS 4.5 TO 5.2%.
 THE FASTEST DRAINAGE IS 120 TO 150 DAYS. TYPICALLY, THE SURFACE IS PALE BROWN LOAM 3 INCHES THICK. THE SUBSOIL IS
 BROWN SANDY LOAM 12 INCHES THICK. THE SUBSTRATUM IS PALE BROWN SANDY LOAM AND FINE SANDY LOAM TO A DEPTH OF 60
 INCHES. SLOPE RANGE FROM 2 TO 6 PERCENT.

ESTIMATED SOIL PROPERTIES

DEPTH (IN)	USDA TEXTURE	UNIFIED	AASHTO	PERCENT FINE SAND	PERCENT OF MATERIAL LESS THAN 3 IN. PASS NO. 20				LIQUID LIMIT	PLASTIC LIMIT
					20	40	60	100		
0-3	S	SM, SM-SC	A-2, A-4	0	100	100	60-70	30-40	22-25	15-18
0-2	L	ML, CL-ML	A-3	↓	↓	↓	65-95	60-75	25-35	5-10
0-3	C	CL	A-6	↓	↓	↓	70-100	70-80	35-50	15-20
3-15	SC, CL, L	SC, CL	A-4	↓	↓	↓	65-95	45-75	20-40	10-20
15-60	CL, FC	SM-SC, SM	A-2, A-4	↓	↓	↓	65-80	30-50	20-25	10-15

DEPTH (IN)	CLAY FCT OF CLAY	MOISTURE DENSITY (G/CM ³)	PERCENT FINE SAND	AVAILABLE WATER CAPACITY (IN %)	SOIL REACTION	SALINITY (MMHOS CM)	SHRINKAGE POTENTIAL	EMPIRICAL FACTOR		WIND EFFECT GROUP	ORGANIC MATTER PCT	CORROSION	
								S	T			STEEL	ALUM.
SALE	8-17		20-40	0.11 - 0.13	7.4-8.4	2	LOW	20	5	3	5-1	HIGH	LOW
DEPTH	12-21		15-20	0.16 - 0.18	↓	↓	↓	28	↓	↓	↓	↓	↓
A	20-35		12-20	0.19 - 0.21	↓	↓	↓	↓	↓	↓	↓	↓	↓
ABOVE	15-25		12-20	0.14 - 0.21	↓	↓	↓	↓	↓	↓	↓	↓	↓
	8-17		20-40	0.11 - 0.15	7.4-9.0	↓	↓	↓	↓	↓	↓	↓	↓

FLOODING			HURRICANE			CEMENTATION		BEEF		SUBSIDIARY		FLOOD RISK	FLOOD ACTION
DEPTH (IN)	PERCENT	MONTHS	DEPTH (IN)	PERCENT	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INITIAL IN	TOTAL IN		
2-10			2-10			2-10		2-10				B	LOW

SANITARY FACILITIES			CONSTRUCTION MATERIAL		
FOOTNOTES	FOOTNOTES	FOOTNOTES	FOOTNOTES	FOOTNOTES	FOOTNOTES
SLIGHT			FAIR-LOW STRENGTH		
2-7% SEVERE - SEEPAGE			IMPROBABLE - EXCESS FINES		
7-9% SEVERE - SEEPAGE, SLOPE			IMPROBABLE - EXCESS FINES		
SLIGHT			GOOD		
SLIGHT					

BUILDING SITE DEVELOPMENT			WATER MANAGEMENT		
FOOTNOTES	FOOTNOTES	FOOTNOTES	FOOTNOTES	FOOTNOTES	FOOTNOTES
SLIGHT			SEVERE - SEEPAGE		
SLIGHT			SLIGHT		
SLIGHT			SEVERE - NO WATER		
SLIGHT			DEEP TO WATER		
2-4% SLIGHT			2-3% LCL FAVORABLE		
4-8% MODERATE - SLOPE			2-3% SLI SOIL BLOWING		
			3-4% LCL SLOPE		
			3-4% SLI SOIL BLOWING, SLOPE		
SEVERE - LOW STRENGTH			SLI SOIL BLOWING		
			CLL FAVORABLE		
			FAVORABLE		

REGIONAL INTERPRETATIONS		

[illegible][illegible][illegible][illegible]

PLANT NAME		PLANT SYMBOL	PERCENTAGE COMPOSITION OF TOTAL DRY MATTER			
			WET WEIGHT	DRY WEIGHT	CELLULOSE	LIGNIN
WESTERN WHEATGRASS	ACOM					
GALLETA	HICG					
ALKALI SAGEBRUSH	SPAL					
BIG SAGEBRUSH	ARTC					
ANNUAL NATIVE FORBS	AAFF					
OTHER PERENNIAL GRASSES	PPCG					
OTHER SHRUBS	SSSS					
ST. LOUIS CIRRATA	BCGR2					
INDIAN RICEGRASS	CHYH					
ML STONEGRASS	PCFE					
POTENTIAL PRODUCTION (LBS/AC OF LAND)						
FAVORABLE YEARS		900				
NORMAL YEARS		650				
UNFAVORABLE YEARS		400				

1	PAINTING ITS BASED ON MATERIAL BELOW 15 INCHES
2	CONCRETE PAINTING RANGE SIZE NO. 1 HOLE 3.6
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Fruitland Series

The Fruitland series is classified as Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic. These deep, well drained soils formed in alluvium and eolian materials derived mainly from shale and sandstone and are on upland hills and breaks. Slope is 5 to 30 percent. Elevation is 6,600 to 7,000 feet. The average annual precipitation is 8 inches. The average annual air temperature is 53 degrees F, and the frost-free season is 140 to 160 days.

Typical pedon of Fruitland sandy loam, from an area of Fruitland-Persayo-Sheppard complex, hilly, 1,600 feet south, 500 feet west of the northeast corner of sec. 22, T. 22 N., R. 7 W.

A1--0 to 2 inches: pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable; few very fine and fine roots; few very fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1--2 to 7 inches; yellowish brown (10YR 5/4) sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky; few very fine and fine roots; few very fine continuous pores; strongly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C2--7 to 24 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable; slightly sticky; few very fine and fine roots; few very fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C3--24 to 31 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C4--31 to 60 inches; pale brown and brown stratified sandy loams and loamy sands.

Depth to bedrock is greater than 60 inches.

The A horizon has textures of sandy loam. It has hue of 10YR or 2.5Y, value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 through 4.

The C horizon has textures of sandy loam or fine sandy loam. Stratified loamy sands, sand or gravels may occur in the lower substratum. It has hue of 10YR or 2.5Y, value of 5 or 6 dry, 4 or 5 moist, and chroma of 3 or 4.

THE FRUITLAND SERIES CONSISTS OF DEEP, WELL DRAINED SOILS FORMED IN MIXED ALLOUVIUM ON VALLEY SIDES, ALLUVIAL FANS, AND MESAS. ELEVATION RANGE 4800 TO 6500 FEET. MEAN ANNUAL PRECIPITATION IS 6 TO 10 INCHES. MEAN ANNUAL AIR TEMPERATURE IS 51 TO 55 F., AND THE FROST-FREE SEASON IS 140 TO 165 DAYS. TYPICALLY THE SURFACE LAYER IS A BROWN CALCAREOUS SANDY LOAM 7 INCHES THICK. THE SUBSTRATUM IS A PALE BROWN AND LIGHT YELLOWISH BROWN CALCAREOUS SANDY LOAM TO 40 INCHES OR MORE. SLOPE RANGES FROM 0 TO 30 PERCENT.

ESTIMATED SOIL PROPERTIES (1)

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACTURE	PERCENT OF MATERIAL LESS	LIQUID	PLAS-
0-7	SL. FS	SM	A-2, A-4	0	100	100	60-75 30-45
0-7	SCL. L	SM-SCL. SC. CL. CL-M	A-6, A-4	0	100	100	80-90 40-60
0-7	LFS	SM	A-2	0	100	100	50-75 15-30
7-60	FSL. S	SM	A-4, A-2	0	100	100	60-75 30-45

DEPTH (IN.)	CLAY	WATER BULK	PERME- ABILITY	AVAILABLE WATER CAPACITY	SOIL REACTION	SALINITY (MMHUS/CM)	SHRINK- SWELL	EROSION FACTORS	WIND EROD.	ORGANIC MATTER	CORROSION
0-7	5-10	2.0-0.0	0.11-0.13	7.4-8.4	<4	LOW	0.24	5	3	0.6-0.8	SLIGHT
0-7	10-25	0.0-2.0	0.15-0.17	7.4-8.4	<4	LOW	0.26	5	5	0.6-0.8	SLIGHT
0-7	5-12	0.0-2.0	0.08-0.11	7.4-8.4	<4	LOW	0.24	5	1	0.6-0.8	SLIGHT
7-60	5-18	2.0-0.0	0.11-0.13	7.4-8.4	<4	LOW	0.26				

FLOODING

DEPTH	KIND	MONTHS	DEPTH	HARDNESS	DEPTH	HARDNESS	INIT.	TOTAL	GRP	POTENTIAL
0-7	0-15	0-15	0-15	0-15	0-15	0-15	0-15	0-15	0-15	0-15

SANITARY FACILITIES

SEPTIC TANK	0-8% SLIGHT		0-15% MODERATE-SLOPE		15% SEVERE-SLOPE
ABSORPTION					
FIELDS					
SEWAGE	0-7% SEVERE-SEEPAGE		7% SEVERE-SEEPAGE, SLOPE		
LAUNCH					
AREAS					
SANITARY	0-8% SLIGHT		8-15% MODERATE-SLOPE		15% SEVERE-SLOPE
LANDFILL					
(TRENCH)					
SANITARY	0-8% SLIGHT		8-15% MODERATE-SLOPE		15% SEVERE-SLOPE
LANDFILL					
(AREA)					
DAILY	0-8% SLIGHT		8-15% MODERATE-SLOPE		15% SEVERE-SLOPE
COVER FOR					
LANDFILL					

CONSTRUCTION MATERIAL

0-15% GOOD	
15-25% FAIR-SLOPE	
25% POOR-SLOPE	
IMPROBABLE-EXCESS FINES	
IMPROBABLE-EXCESS FINES	
0-8% SL. FSL. SCL. L: GOOD	
8-15% SL. FSL. SCL. L: FAIR-SLOPE	
0-8% LFS: FAIR-TOO SANDY	
8-15% LFS: FAIR-TOO SANDY, SCL. L	
15% POOR-SLOPE	
0-8% SEVERE-SEEPAGE	
8% SEVERE-SEEPAGE, SLOPE	

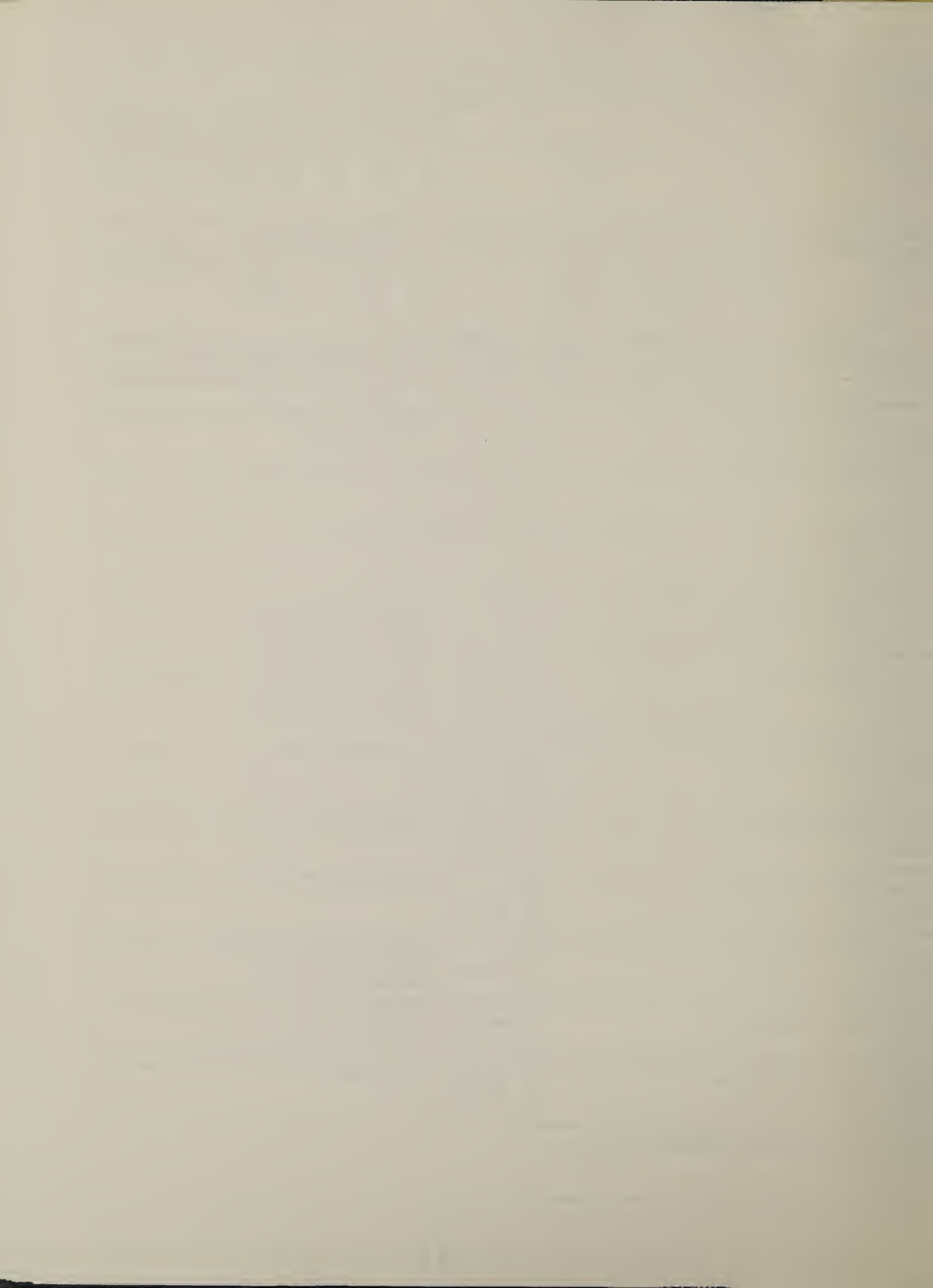
WATER RESERVOIR

0-8% SEVERE-SEEPAGE	
8% SEVERE-SEEPAGE, SLOPE	

BUILDING SITE RECOMMENDATIONS

SHALLOW	0-8% SLIGHT		8-15% MODERATE-SLOPE		15% SEVERE-SLOPE
CAVATIONS					
DEWELLINGS	0-8% SLIGHT		8-15% MODERATE-SLOPE		15% SEVERE-SLOPE
WITHOUT					
EASEMENTS					
DEWELLINGS	0-8% SLIGHT		8-15% MODERATE-SLOPE		15% SEVERE-SLOPE
WITH					
EASEMENTS					
SMALL	0-8% SLIGHT		8-15% MODERATE-SLOPE		15% SEVERE-SLOPE
COMMERCIAL					
BUILDINGS					
LOCAL	0-8% SLIGHT		8-15% MODERATE-SLOPE		15% SEVERE-SLOPE
ROADS AND					
STREETS					
LANDSCAPING	0-8% SLIGHT		8-15% MODERATE-SLOPE		15% SEVERE-SLOPE
AND GOLF					
FAIRWAYS					

REGIONAL INTERPRETATIONS



CAMP AREAS	0-15% SL, SCL, LFS: MODERATE-SLOPE 0-8% L: MODERATE-DUSTY 8-15% L: MODERATE-SLOPE, DUSTY 15-25% SEVERE-SLOPE	PLAYGROUNDS	2-6% SL, FSL, SCL, L: MODERATE-SLOPE 0-2% L: MODERATE-DUSTY 2-6% L: MODERATE-SLOPE, DUSTY 6-13% SEVERE-SLOPE
PICNIC AREAS	0-8% SL, FSL, SCL, LFS: SLIGHT 8-15% SL, FSL, SCL, LFS: MODERATE-SLOPE 0-8% L: MODERATE-DUSTY 8-15% L: MODERATE-SLOPE, DUSTY 15-25% SEVERE-SLOPE	PATHS AND TRAILS	0-15% SL, FSL, SCL, LFS: SLIGHT 15-25% SL, FSL, SCL, LFS: MODERATE-SLOPE 0-15% L: MODERATE-DUSTY 15-25% L: MODERATE-SLOPE, DUSTY 25-35% SEVERE-SLOPE

CLASS- DETERMINING PHASE	CROP YIELDS PER ACRE (IN CHOPS AND PASTURE) (HIGH LEVEL MANAGEMENT)											
	CA-ALF		ALFALFA		PASTURE		CORN		CORN		GRASS HAY	
	BILITY		HAY		(TONS)		(T)		SILAGE		(TONS)	
	MI	IB	MI	IB	MI	IB	MI	IB	MI	IB	MI	IB
0-2%	7E	3	7		25		125		25		5	
0-5%	7E	3	6		20		110		20		4.5	
0-8%	7E	4E	5		16		-		-		4	

CLASS- DETERMINING PHASE	SYM	MAJOR SOIL PROBLEMS						POTENTIAL PROBLEMS			
		EROSION	EQUIP.	SEEDLING	ROOTING	PLANT		COMMON TREES		SITE	TREES TO PLANT
		HAZARD	LIMIT	HAZARD	HAZARD	HAZARD				INDEX	
								NONE			

MAJOR SOIL PROBLEMS		SEEDLING		ROOTING		PLANT		COMMON TREES		SITE	
0-2% IRR	RUSSIAN-THORN										
0-5% IRR											
0-8% IRR											
0-15% IRR											

CLASS- DETERMINING PHASE	POTENTIAL PROBLEMS											
	GRAIN & GRASS			WETLAND			SHALLOW			OPENED		
	POOR			POOR			POOR			POOR		
	MI	IB	MI	IB	MI	IB	MI	IB	MI	IB	MI	IB
0-2% IRR	POOR	POOR	POOR	-	-	-	POOR	POOR	POOR	POOR	POOR	POOR
0-5% IRR	POOR	POOR	POOR	-	-	-	POOR	POOR	POOR	POOR	POOR	POOR
0-8% IRR	POOR	POOR	POOR	-	-	-	POOR	POOR	POOR	POOR	POOR	POOR
0-15% IRR	POOR	POOR	POOR	-	-	-	POOR	POOR	POOR	POOR	POOR	POOR

COMMON PLANT NAME	PLANT SYMBOL	PERCENTAGE COMPOSITION (BY WEIGHT) BY CLASS DETERMINING PHASE					
		WARM	COOL				
		(MI, IB)	(MI, IB)				
POURING SALTGRASS	ATCA2	10	5				
BLUE GRAMA	BOGR2	20	25				
GIANT DROPSID	SPOT	10	-				
INDIAN RICEGRASS	CHRY	25	10				
GALLETA	HEJA	5	10				
NEW MEXICO FEATHERGRASS	STNE2	5	-				
NEVADA MORMON-TEA	EPNE	5	-				
SAND DROPSID	SPOR	5	5				
WINTERFAT	EGLAS	5	-				
BIG SAGEBRUSH 3/	ART2	10	5				
OTHER PERENNIAL FORB	PHFF	-	5				
WESTERN WHEATGRASS	AUGM	-	15				
NEEDLEANDTHREAD	STCO4	-	10				
SIDEOTS GRAMA	DECO	-	5				

POTENTIAL PRODUCTION (LBS./AC. DRY MAT):							
FAVORABLE YEARS	600	600					
NORMAL YEARS	700	600					
UNFAVORABLE YEARS	300	300					

FOOTNOTES

- 2 STRATIFIED SAND, GRAVELL MAY OCCUR BELOW 40 INCHES.
- 3 ESTIMATES OF ENGINEERING PROPERTIES ARE BASED ON TEST DATA OF 1 PEDON FROM SAN JUAN COUNTY, NEW MEXICO.
- 1 SEEPAGE OF LEACHATE IS NOT A LIMITATION.
- 3 NOT USUALLY UTILIZED BY CATTLE. UTILIZED BY SHEEP IN THE SPRING AND FALL.

Gobernador Series

The Gobernador series is classified as Ustertic Torrifuvents, fine, montmorillonitic (calcareous), mesic. These deep, well drained soils formed in alluvium derived mainly from shale and sandstone and are on upland valley bottoms. Slope is 0 to 2 percent. Elevation is 6,000 to 6,900 feet. The average annual precipitation is 12 inches. The average annual air temperature is 50 degrees F, and the frost-free season is 120 to 150 days.

Typical pedon of Gobernador silty clay loam, from an area of Gobernador-Fort Collins association, gently sloping, 1,620 feet west, 1,110 feet north of the southeast corner of sec. 27, T. 29 N., R. 6 E.

A1--0 to 2 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; weak fine platy structure; soft, very friable, sticky and plastic; few very fine roots; few very fine and fine continuous pores; slightly effervescent with disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

C1--2 to 60 inches; brown (10YR 5/3) clay, dark grayish brown (10YR 4/2) moist; massive; very hard, very firm, sticky and plastic; few very fine roots; few very fine continuous pores; slightly effervescent with disseminated calcium carbonate; strongly alkaline.

Depth to bedrock is greater than 60 inches.

The A horizon has textures of clay loam, or silty clay loam, value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 or 3.

The C horizon has texture of clay or silty clay, value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 or 3.

SOIL INTERPRETATIONS RECORD

MLRA(S) 32 KIND OF UNIT SERIES UNIT NAME GOBERNADOR
 STATE NEW MEXICO RECORD NO. 466 AUTHOR(S) JER DATE 7-79 REVISED UNIT MODIFIER
 CLASSIFICATION AND BRIEF SOIL DESCRIPTION

THE GOBERNADOR SERIAL CONSISTS OF DEEP, WELL DRAINED, SALINE-ALKALI SOILS FORMED IN ALLUVIUM DERIVED FROM SANDSTONE AND SHALE ON UP- AND VALLEY FLOORS. ELEVATIONS RANGE 6000 TO 6800 FEET. M.A.P. IS 10 TO 13 INCHES. M.A.A.T. IS 48 TO 52°F. AND THE FROST FREE SEASON IS 120 TO 150 DAYS. TYPICALLY, THE SURFACE LAYER IS PALE BROWN SILTY CLAY UPON ABOUT 2 INCHES THICK. THE SUBSTRATUM IS BROWN CLAY TO A DEPTH OF 160 INCHES OR MORE. SLOPE RANGES FROM 0 TO 3 PERCENT.

FOOTNOTES		ESTIMATED SOIL PROPERTIES								
DEPTH (IN)	USDA TEXTURE	UNIFIED	AASHTO	FRACT. + 3 IN (PCT.)	PERCENT OF MATERIAL LESS THAN 3 IN. PASS NO. 50 SIEVE				LIQUID LIMIT	PLASTICITY INDEX
					4	10	40	200		
0-2	SICL, CL	CL	A-6, A-7	0	100	100	90-100	75-90	35-45	15-20
2-60	C, SIC	CL, CH	A-7	0	100	100	90-100	75-90	45-55	20-30

DEPTH (IN)	CLAY (PCT OF < 2MM)	MOIST BULK DENSITY (G/CM ³)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (pH)	SALINITY (MMHOS/CM)	SHRINK SWELL POTENTIAL	EROSION FACTOR	AMC PERCENT	ORGANIC MATTER (PCT)	CORROSION	
28-35	-	-	0.2-0.6	0.10-0.11	7.9-8.0	2-4	MODERATE	.32	5	41	5-1	HIGH
45-50	-	-	0.06-0.2	0.07-0.08	7.9-8.0	8-16	HIGH	.32				LOW

FLOODING			HIGH WATER TABLE			COMPACTED FILL		BEDROCK		SUSCEPTIBILITY		HYD. GRP.	POTENTIAL FLOOD ACTION
FREQUENCY	DURATION	MONTHS	DEPTH (FT)	NAME	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INITIAL (IN)	TOTAL (IN)		
NONE			> 60					760				D	LOW

FOOTNOTES		SANITARY FACILITIES		KEYING ONLY	FOOTNOTES		CONSTRUCTION MATERIAL	
SEPTIC TANK ABSORPTION FIELDS	SEVERE - PERCS SLOWLY			FILL 15			POOR - LOW STRENGTH, SHRINK SWELL	
SEWAGE LAGOONS	SLIGHT			SAND 2			IMPROPER - EXCESS FINES	
SANITARY LANDFILL (TRENCH)	SEVERE - TOO CLAYEY			GRAVEL 1			IMPROPER - EXCESS FINES	
SANITARY LANDFILL (AREA)	SLIGHT			SOIL 1			POOR - TOO CLAYEY, EXCESS SALT	
DAILY COVER FOR LANDFILL	POOR - TOO CLAYEY							

FOOTNOTES		BUILDING SITE DEVELOPMENT		KEYING ONLY	FOOTNOTES		WATER MANAGEMENT	
SHALLOW EXCAVATIONS	MODERATE - TOO CLAYEY			DRAIN 2			MODERATE - EXCESS SALT, HARD TO PACK	
DWELLINGS WITHOUT BASEMENTS	SEVERE - SHRINK SWELL			PONDAGE 2			SEVERE - NO WATER	
DWELLINGS WITH BASEMENTS	SEVERE - SHRINK SWELL			DRAIN 2			DEEP TO WATER	
SMALL COMMERCIAL BUILDINGS	SEVERE - SHRINK SWELL			IRRIG 2			SICL, CL: DROUGHTY, PERCS SLOWLY, EXCESS SALT	
LOCAL ROADS AND STREETS	SEVERE - SHRINK SWELL, LOW STRENGTH			TERRAC 2			PERCS SLOWLY	
LAGNS, LANDSCAPING, AND GOLF FAIRWAYS				WATER 2			EXCESS SALT, DROUGHTY, PERCS SLOWLY	

FOOTNOTES		REGIONAL INTERPRETATIONS	

Lybrook Series

The Lybrook series is classified as Vertic Torrifuvents, fine montmorillonitic (calcareous), mesic. These deep, well drained soils formed in alluvium derived mainly from shale and sandstone and are on floodplains and upland valley bottoms. Slope is 0 to 2 percent. Elevation is 6,000 to 6,900 feet. The average annual precipitation is 8 inches. The average annual air temperature is 53 degrees F, and the frost-free season is 140 to 160 days.

Typical pedon of Lybrook silt loam, from an area of Binton-Councilor-Lybrook association, gently sloping, 2,000 feet north and 2,000 feet east of the southwest corner of sec. 16, T. 25 N., R. 6 W.

A1--0 to 2 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3), moist; weak fine platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine and fine continuous pores; slightly effervescent with disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

C1--2 to 7 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; massive; very hard, very firm, slightly sticky and slightly plastic; few very fine roots; slightly effervescent with disseminated calcium carbonate; very strongly alkaline; clear and gradual boundary.



C2--7 to 60 inches; pale brown (10YR 6/3) clay, brown (10YR 5/3) moist; massive very hard, very firm, sticky and plastic; few very fine roots; slightly effervescent with disseminated calcium carbonate; very strongly alkaline.

Depth to bedrock is greater than 60 inches. This soil is saline and nonsaline and alkali and nonalkali.

The A horizon has textures of silt loam or clay loam. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 3 or 4.

The C horizon has textures of clay loam, silt loam, clay or silt, clay with the clay loam and silt loam occurring above or below the control section or as thin lenses within it. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 3 or 4.

SOIL INTERPRETATIONS RECORD

MLRA(S) 37 KIND OF UNIT SERIES UNIT NAME LYBROOK
STATE NEV RECORD NO 464 AUTHOR(S) DATE 7-74 REVISED UNIT MODIFIER
CLASSIFICATION AND BRIEF SOIL DESCRIPTION

THE LYBROOK SERIES CONSISTS OF BELL WASH PLAIN, 150-250 FT. THICK, FORMED IN ALLUVIUM DERIVED FROM SANDSTONE AND SHALE OF
CLAY VALLEY FORMATION AND FLOODPLAIN. ELEVATION IS 6000 TO 6200 FEET. AVERAGE ANNUAL RAINFALL IS 15.5 INCHES. GROWING SEASON IS 140 TO 160 DAYS. TYPICALLY, THE SURFACE LAYER IS
SANDY SILT LOAM ABOUT 3 INCHES THICK. THE NEXT LAYER IS FINE BROWN CLAY LOAM ABOUT 5 INCHES THICK. THE SUBSTRATUM
IS DARK BROWN CLAY. THE DEPTH OF THE SURFACE LAYER Varies FROM 0 TO 2 FEET.

FOOTNOTES				ESTIMATED SOIL PROPERTIES									
DEPTH (IN)	USDA TEXTURE	UNIFIED	AASHC	FRAC. >> 3 IN. (PCT)	PERCENT OF MATERIAL LESS THAN 3 IN. PASS NO. 5 SEVE				LIQ. LMT	PLASTICITY INDEX			
					4	10	40	75					
0-2	SIL	M-H, CL-MH	A-4	0	100	100	90-100	70-90	25-35	5-15			
0-2	CL	C	A-4, A-7	0	100	100	90-100	70-90	35-45	15-25			
2-7	C	C	A-4, A-7	0	100	100	90-100	70-90	35-45	15-25			
7-60	C, S.C	C-H, CH	A-7	0	100	100	90-100	80-95	45-55	20-30			
DEPTH (IN)	CLAY (PCT OF <2µ)	MOIST. CAP. DENSITY (G/CM ³)	PERMEAB. B. (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTIVITY	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS		ORGANIC MATTER (PCT)	CORROSION		
								P	T		STEEL	CEMENT	
SAME DEPTH AS ABOVE	18-27	-	0.2-0.6	0.14-0.21	7.9-7.95	< 2	LOW	.43	5	5	.2-.5	HIGH	LOW
	28-37	-	0.2-0.6	0.14-0.21	7.9-7.95	< 2	MODERATE	.32	5	5	.2-.5	HIGH	LOW
	38-47	-	0.2-0.6	0.14-0.21	7.9-7.95	2-4	MODERATE	.32					
	48-50	-	0.2-0.6	0.14-0.21	7.9-7.95	2-4	HIGH	.20					

FLOODING			HIGH WATER TABLE			CEMENTED FAN		BEEHIVE		SUBSIDENCE		HYD. DRP.	POTENTIAL FROST ACTION
FREQUENCY	DEPTH (IN)	MONTHS	DEPTH (FT)	WIND	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INITIAL (IN)	TOTAL (IN)		
1-2	> 2	> 2	> 2	> 2	> 2	> 2	> 2	> 2	> 2	> 2	> 2	> 2	> 2

FOOTNOTES			SANITARY FACILITIES			FOOTNOTES			CONSTRUCTION MATERIAL		
			SEVERE - PERCS SLOWLY						POOR - LOW STRENGTH, SHRINK-SWELL		
SEPTIC TANK ABSORPTION FIELD						ROCK					
			SLIGHT			SAND			IMPROBABLE - EXCESS FINES		
SEWAGE LAGOON											
			SEVERE - TOO CLAYEY			GRAVEL			IMPROBABLE - EXCESS FINES		
SANITARY LANDFILL (TRENCH)											
			SLIGHT			TOPSOIL			POOR - TOO CLAYEY		
SANITARY LANDFILL (AREA)											

DAILY COVER FOR LANDFILL			2 POOR - TOO CLAYEY			FOOTNOTES			WATER MANAGEMENT		
						POND RESERVOIR AREA			SLIGHT		
FOOTNOTES			BUILDING SITE DEVELOPMENT								
			MODERATE - TOO CLAYEY			EMBANKMENTS Dikes and LEVEES			MODERATE - PIPING		
SHALLOW EXCAVATIONS											
			SEVERE - SHRINK-SWELL			EXCAVATED PONDS AQUIFER FEED			SEVERE - NO WATER		
DWELLINGS WITHOUT BASEMENTS											
			SEVERE - SHRINK-SWELL			DRAINAGE			DEEP TO WATER		
DWELLINGS WITH BASEMENTS											
			SEVERE - SHRINK-SWELL			IRRIGATION			SIL: PERCS SLOWLY, ERODES EASILY CL: PERCS SLOWLY		
SMALL COMMERCIAL BUILDINGS											
			SEVERE - LOW STRENGTH, SHRINK-SWELL			TERRACES AND DIVERSIONS			PERCS SLOWLY		
LOCAL ROADS AND STREETS											
						GRASSED WATERWAYS			PERCS SLOWLY		
LAWN, LANDSCAPING, AND GOLF FAIRWAYS											

FOOTNOTES REGIONAL INTERPRETATIONS

UNIT NAME LYBLODS RECREATIONAL DEVELOPMENT

UNIT MODIFIER: FOOTNOTE

CAMP AREAS	FOOTNOTE SIL: MODERATE - DUSTY CL: SLIGHT	KEYING ONLY PLAYGROUNDS 1 2 3 4 5	FOOTNOTE CL: SLIGHT SIL: MODERATE - DUSTY
PICNIC AREAS	SIL: MODERATE - DUSTY CL: SLIGHT	PATHS AND TRAILS 33 2 3 4 5	SIL: SEVERE - ERODES EASILY CL: SLIGHT

FOOTNOTE CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE WITH LEVEL MANAGEMENT

CLASS- DETERMINING PHASE	CAPABILITY															
	N	IF	N	IF	N	IF	N	IF	N	IF	N	IF	N	IF	N	IF
ALL	75															

FOOTNOTE WOOD AND SOIL TYPE

CLASS DETERMINING PHASE	CHL SYM	EROSION HAZARD	EQUIV LIME	SEEDING MOUNT	WIND HAZARD	PLANT COMITY	POTENTIAL PRODUCTIVITY COMMON TREES	STRE INDEX	TREES TO PLANT
							ADGE		

FOOTNOTE WILDLIFE HABITAT

CLASS DETERMINING PHASE	SPECIES	SPECIES	SPECIES	SPECIES
	ADGE			

FOOTNOTE WILDLIFE HABITAT

CLASS DETERMINING PHASE	GRAIN & SEED	GRASS & LEG	WILD HERB	HARPCD TREES	CONFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPENLAND WILDLIFE	WETLAND WILDLIFE	WETLAND WILDLIFE	RANGELAND WILDLIFE
ALL	Y POOR	Y POOR	POOR			POOR	POOR	Y-POOR	Y-POOR		Y POOR	POOR

FOOTNOTE POTENTIAL WILDLIFE PLANT COMMUNITY (RANGELAND OR FOREST UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMB (N.S.P.)	PERCENTAGE COMPOSITION DRY WEIGHT BY CLASS DETERMINING PHASE
GILLETIA	H11A	
ALKALI SACATON	SPH1	
RED GRASS	BO R2	
PINE SAGEBRUSH	AB32	
	ALFF	
	PFEE	
	SPH1	
WESTERN WHEATGRASS	AG5A	
POTENTIAL PRODUCTION (LBS./AC. DRY WT.)		
FAVORABLE YEARS	700	
NORMAL YEARS	500	
UNFAVORABLE YEARS	300	

FOOTNOTES

1	CLAY TEXTURE CAUSES DIFFICULTY IN EXCAVATING
2	SOIL REMAINS IN CLUMPS AFTER EXCAVATING
3	SOIL IS SUBJECT TO PIPING

SOIL INTERPRETATIONS RECORD

MLRA(S) 37 KIND OF UNIT SERIES UNIT NAME LYPPOOK
STATE NEW MEXICO RECORD NO. 468 AUTHOR(S) SEP DATE 7-79 REVISED UNIT MODIFIER SALINE - ALKALI
CLASSIFICATION AND BRIEF SOIL DESCRIPTION:

THE LYBROW SERIES CONSISTS OF FINE, WEAKLY SALINE-ALKALI SOILS THAT FORMED IN ALLUVIUM DERIVED FROM SACRAMENTO RIVER. SOILS OCCUR ON UPLAND VALLEY PATTERNS AND FLOOD PLAINS. ELEVATION IS 6000 TO 6200 FEET. AVERAGE ANNUAL AIR TEMPERATURE IS 53 F. AVERAGE ANNUAL PRECIPITATION IS 14 TO 18 INCHES. FROST-FREE SEASON IS 150 TO 160 DAYS. TYPICALLY, THE SURFACE LAYER IS PINK BROWN, 1/2 TO 1 INCH THICK. THE NEXT LAYER IS PINK BROWN OR LIGHT BROWN ABOUT 5 INCHES THICK. THE DEEPEST LAYER IS PINK BROWN AND LIGHT YELLOWISH BROWN, 1/2 TO 1 INCH OR MORE. SLOPE RANGES FROM 0 TO 2 PERCENT.

ESTIMATED SOIL PROPERTIES

ESTIMATED SOIL PROPERTIES

FOOTNOTE		ESTIMATED SOIL PROPERTIES								
DEPTH (IN)	USDA TEXTURE	UNIFIED	AASHTO	FRACT. #3 IN (PCT)	PERCENT OF MATERIAL LESS THAN #3 IN PASS NO. 5 SEVE				LIQ. L LIMIT	PLAS. T. L. LIMIT
					#	10	40	200		
0-2	SL	ML, CL-L	A-4	0	100	100	90-100	70-90	25-35	5-15
0-2	CL	CL	A-6, A-7	0	100	100	90-100	70-80	25-45	5-20
2-7	CL	CL	A-6, A-7	0	100	100	90-100	70-80	25-45	15-20
7-60	C.S.S	CL, CH	A-7	0	100	100	90-100	80-95	45-55	20-25

[illegible]

FLOOD NO.			ALL-WATER TABLE			CEMENTED FAN		BEDROCK		SUBSIDENCE		HYD. GRP.	POTENTIAL FLOOD ACT.
FREQUENCY	DURATION	WINDS	DEPTH (FT)	KIND	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INITIAL (IN)	TOTAL (IN)		
10-15 MIN	10-15 MIN	10-15 MIN	10-15			1		10-15		1		D	10-15

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
PRESSURE										VELOCITY										TEMPERATURE										WIND DIRECTION										WIND SPEED										RELATIVE HUMIDITY										CLOUD COVER										PRECIPITATION										SURFACE WIND										SEA WIND										AIR WIND										WAVE DIRECTION										WAVE PERIOD										WAVE HEIGHT										WAVE LENGTH										WAVE FREQUENCY										WAVE ENERGY										WAVE POWER										WAVE DENSITY										WAVE VOLUME										WAVE MASS										WAVE WEIGHT										WAVE FORCE										WAVE PRESSURE										WAVE TENSION										WAVE STRESS										WAVE STRAIN										WAVE DEFORMATION										WAVE DISPLACEMENT										WAVE VELOCITY										WAVE ACCELERATION										WAVE JERK										WAVE SHOCK										WAVE COLLISION										WAVE FRICTION										WAVE RESISTANCE										WAVE DRAG										WAVE LIFT										WAVE PULL										WAVE PUSH										WAVE PRESS										WAVE RELEASE										WAVE RETENTION										WAVE RECOVERY										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL										WAVE REVERSAL									

FOOTNOTES		SANITARY FACILITIES		KEY NO ONLY		FOOTNOTES		CONSTRUCTION MATERIAL	
SEPTIC TANK ABSORPTION FIELDS		SEVERE - PERCS SLOWLY		FILL	19%	ROAD FILL		POOR - LOW STRENGTH SHRINK - SWELL	
SEWAGE LAGOONS		NONE, PROT: SLIGHT		SAND	2%	SAND		IMPROBABLE - EXCESS FINES	
		RARE: SEVERE - FLOODS							
SANITARY LANDFILL (TRENCH)		SEVERE - TOO CLAYEY		GRAVEL	1%	GRAVEL		IMPROBABLE - EXCESS FINES	
SANITARY LANDFILL AREA		NONE, PROT: SLIGHT		SILT	2%	TOP SOIL		POOR - TOO CLAYEY, EXCESS SALT	
		RARE: MODERATE - FLOODS							

DAILY COVER FOR LANDFILL	2 POOR - TOO CLAYEY.	FOOTNOTES	POND RESERVOIR AREA	WATER MANAGEMENT		
					POND: 23	SLIGHT
					2	
					3	
					4	

FOOTNOTES		BUILDING SITE DEVELOPMENT		WHEN		OTHER	
SHALLOW EXCAVATIONS	MODERATE - TOC CLAYEY	DIKES	24	EMBANKMENTS DIKES AND LEVEES	B MODERATE - PIPING, EXCESS SALT		
			2				
			3				
			4				
			5				

DWELLINGS WITHOUT BASEMENTS	NO HE, PROT: SEVERE - SHRINK-SWELL	PONDS	25	EXCAVATED POND AQUIFER FEED	SEVERE - NO WATER
	RARE: SEVERE - SHRINK-SWELL, FLOODS		2		
			3		
			4		
	SEVERE SHRINK-SWELL	DRAIN	25		DEEP TO WATER

DWELLINGS WITH BASEMENTS	NONE, PROT: SEVERE-SHRINK-SWELL				DRAINAGE	
	RARE: SEVERE-SHRINK-SWELL, FLOODS					
	NONE, PROT: SEVERE-SHRINK-SWELL	IRF C	27			SIL: DROUGHTY, PERCS SLOWLY. ERODES EASILY PERCS SLOWLY

SMALL - COMMERCIAL BUILDINGS	RARE: SEVERE - SHRINK-SWELL, FLOODS			3	IRRIGATION	CL: DROUGHTY, PERCS EXCESS SALT
				4		
				5		
LOCAL	SEVERE - SHRINK-SWELL, LOW STRENGTH	TERRAC	26:	2	TERRACES AND	PERCS SLOWLY
				3		

[illegible][illegible]

UNIT NAME LYPBOUR
UNIT MODIFIER: SCHIFF-ALSKAL

KEYING ON.

- FOOTNOTES

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PLAYGROUNDS

SEVERE - EXCESS M.I.

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PATHS AND TRAILS

SIL: SEVERE - ERODES EASILY
CL: SLIGHT

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PICNIC AREAS

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CAPACITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH-LEVEL-MANAGEMENT)

[illegible][illegible][illegible][illegible][illegible]

SYN	
1	CLAY TEXTURE CAUSES DIFFICULTY IN EXCAVATING.
2	SOIL REMAINS IN CLods AFTER EXCAVATING.
3	SOIL IS SUBJECT TO BULGING.
4	
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Navacity Series

The Navacity series is classified as Ustic Torrifuvents, fine-loamy, mixed (calcareous), mesic. These deep, well drained soils formed in alluvium derived mainly from shale and sandstone and are on upland valley bottoms. Slope is 0 to 3 percent. Elevation is 6,000 to 6,800 feet. The average annual precipitation is 12 inches. The average annual air temperature is 50 degrees F, and the frost-free season is 120 to 150 days.

Typical pedon of Navacity sandy loam, from an area of Fort Collins-Navacity association, gently sloping, 938 feet south and 365 feet east of the northwest corner of sec. 9, T. 29 N., R. 7 W.

A1--0 to 3 inches; brown (10YR 5/3) sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable; few very fine and fine roots; few very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

C1--3 to 8 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable; few fine roots; few very fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.



C2--8 to 11 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; soft, very friable; few fine roots; few fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C3--11 to 15 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable; few fine roots; few fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C4--15 to 40 inches; brown (10YR 5/3) clay loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; few very fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C5--40 to 48 inches; pale brown (10YR 5/3) clay loam, dark grayish brown (10YR 4/2) moist; massive; hard, very firm, sticky and plastic; few very fine roots; few very fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.



C6--48 to 52 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; massive; soft, very friable; sticky and plastic; few very fine roots; few very fine continuous pores; strongly effervescent with disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

C7--52 to 60 inches; brown (10YR 5/3) clay loam, dark grayish brown (10YR 4/2) moist; slightly hard, firm, sticky and plastic; few very fine roots; few very fine continuous pores; strongly effervescent with disseminated calcium carbonate; strongly alkaline.

Depth to bedrock is greater than 60 inches.

The A horizon has textures of sandy loam, loam or clay loam. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 or 4.

The C horizon has textures of loam, silty clay loam, clay loam or sand, clay loam. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 or 3. Thin strata of sandy loam, fine sandy loam, or loamy sand occur above or below the control section or as thin lenses within it.



SOIL INTERPRETATIONS RECORD

MURA 36 KIND OF UNIT SERIES UNIT NAME NAVACITY
 STATE NEW MEXICO RECORD NO. 467 AUTHOR(S) JEP DATE 6-79 REVISED UNIT MODIFIER
 CLASSIFICATION AND BRIEF SOIL DESCRIPTION

THE NAVACITY SERIES CONSISTS OF DEEP, MEDIUM LOANED SOILS THAT FORMED IN ALLUVIUM DERIVED FROM SANDSTONE AND SHALE IN
 FLAT VALLEY BOTTOMS AND FLOOD PLAINS. ELEVATION 6000 TO 6800 FEET. ANNUAL TEMPERATURE 45 TO 52 F. AND
 AVERAGE ANNUAL PRECIPITATION IS 10 TO 12 INCHES. FROST-FREE SEASON IS 120 TO 150 DAYS. USUALLY THE SURFACE LAYER IS
 A VERY SANDY LOAM ABOUT 3 INCHES THICK. THE NEXT LAYER IS PALE BROWN SANDY LOAM AND FINE SAND LOAM ABOUT 12 INCHES
 THICK. THE SUBSTRATUM IS BROWN AND PALE BROWN CLAY TO 60 INCHES OR MORE. SLOPE RANGES FROM 0 TO 3 PERCENT.

ESTIMATED SOIL PROPERTIES										
DEPTH (IN)	USDA TEXTURE	UNIFIED	AASHTO	FRACT. > 3 IN. (PCT)	PERCENT OF MATERIAL LESS THAN 3 IN. PASSING SIEVE				LIQUID LIMIT	PLASTICITY INDEX
0-3	SL	SM, SM-CL	A-2, A-4	0	100	100	60-70	30-40	25	10-15
0-3	L	ML, CL-ML	A-4	0	100	100	85-95	60-75	25-35	5-15
0-3	CL	CL	A-6	0	100	100	90-100	70-80	30-40	10-20
3-15	FSL, SL	SM, SM-SC, ML, CL-M	A-4	0	100	100	65-75	35-55	25	10-15
15-60	CL, L	CL	A-6	0	100	100	85-95	60-75	30-40	10-20

DEPTH (IN)	CLAY (PCT OF < 2µ)	MOIST BULK DENSITY (G/CM³)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN)	SOIL REACTION (pH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSION	
10-17	-	-	2.0-2.2	0.11-0.13	7.9-8.4	< 2	LOW	.24 S	3	.5-1	HIGH	LOW
18-27	-	-	2.0-2.2	0.11-0.13	7.9-8.4	< 2	LOW	.37 S	5	.5-1		
28-35	-	-	2.0-2.2	0.11-0.13	7.9-8.4	< 2	MODERATE	.32 S	6	.5-1		
36-45	-	-	2.0-2.2	0.11-0.13	7.9-8.4	< 2	LOW	.24 S	3	.5-1		
46-55	-	-	2.0-2.2	0.11-0.13	7.9-8.4	< 2	MODERATE	.32 S	6	.5-1		

FLOODING			HIGH WATER TABLE			CEMENTED PAV.		BEDROCK		SUBSIDENCE		HYD. GPP	POTENTIAL FROST ACTION
FREQUENCY	DURATION	WINDSPEED	DEPTH (FT.)	KIND	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INITIAL (IN)	TOTAL (IN)		
10-15			> 6.0					> 6.0					LOW

FOOTNOTES			SANITARY FACILITIES			FOOTNOTES			CONSTRUCTION MATERIAL		
SEPTIC TANK ABSORPTION FIELDS			SEVERE - PERCS SLOWLY			ROADFILL			MODERATE - LOW STRENGTH, SHRINK-SWELL		
SEWAGE LAGOONS			2-2 1/2% SLIGHT 2+ 1/2% MODERATE - SLOPE			SAND			IMPROBABLE - EXCESS FINES		
SANITARY LANDFILL (TRENCH)			SLIGHT			GRAVEL			IMPROBABLE - EXCESS FINES		
SANITARY LANDFILL (AREA)			SLIGHT			TOPSOIL			FAIR - TOO CLAYEY		

FOOTNOTES			BUILDING SITE DEVELOPMENT			FOOTNOTES			WATER MANAGEMENT		
DAILY COVER FOR LANDFILL			GOOD			POND RESERVOIR AREA			SLIGHT		
SHALLOW EXCAVATIONS			SLIGHT			EMBANKMENTS Dikes AND LEVEES			MODERATE - PILING		
DWELLINGS WITHOUT BASEMENTS			MODERATE - SHRINK-SWELL			EXCAVATED PONDS AQUIFER FED			SEVERE - NO WATER		
DWELLINGS WITH BASEMENTS			MODERATE - SHRINK-SWELL			DRAINAGE			DEEP TO WATER		
SMALL COMMERCIAL BUILDINGS			MODERATE - SHRINK-SWELL			IRRIGATION			SL: SOIL BLOWING L, CL: FAVORABLE		
LOCAL ROADS AND STREETS			MODERATE - LOW STRENGTH, SHRINK-SWELL			TERRACES AND DIVERSIONS			SL: SOIL BLOWING L, CL: FAVORABLE		
LAWNS, LANDSCAPING, AND GOLF FAIRWAYS						WATERWAYS			FAVORABLE		

FOOTNOTES			REGIONAL INTERPRETATIONS		

Oelop Series

The Oelop series is classified as Ustollic Haplargids, fine-loam, mixed, mesic. These deep, well drained soils formed in alluvium and eolian material derived mainly from shale and sandstone and are on mesas and plateaus. Slope is 0 to 8 percent. Elevation is 6,200 to 6,800 feet. The average annual precipitation is 12 inches. The average annual air temperature is 50 degrees F. and the frost-free season is 120 to 150 days.

Typical pedon of Oelop loam, gently sloping, 2,084 feet south, 250 feet west of the northeast corner of sec. 13, T. 25 N., R. 7 E.

A1--0 to 2 inches; brown (7.5 YR 5/4) loam, dark brown (7.5YR 4/4), moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine continuous pores; moderately alkaline; clear smooth boundary.

B1--2 to 4 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4), moist; weak fine subangular blocky structure; soft, very friable; few very fine roots; few very fine continuous pores; moderately alkaline; clear smooth boundary.

B2t--4 to 19 inches; dark brown (7.5YR 4/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine and medium continuous pores; few thin clay films on faces of peds; moderately alkaline; clear smooth boundary.

B3ca--19 to 30 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine roots; few fine continuous pores; strongly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1ca--30 to 39 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4) moist; massive; slightly hard, firm, slightly plastic; few very fine roots; few very fine and fine continuous pores; strongly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C2ca--39 to 60 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable; few very fine roots; few very fine and fine continuous pores; violently effervescent with disseminated calcium carbonate; strongly alkaline.

Depth to bedrock is greater than 60 inches. The solum thickness is 13 to 44 inches.

The A horizon has textures of loam, silt loam, or fine sandy loam. It has hue of 7.5YR or 10YR, value of 5 or 6 dry, 4 or 5 moist, and chroma of 3 or 4.

The B horizon has textures of loam, clay loam, or silty clay loam. It has hue of 5YR or 7.5YR, value of 4 through 6 dry, 3 through 6 moist, and chroma of 2 through 4.

The C horizon has textures of clay loam, loam, silty clay loam or sandy loam. It has value of 5 or 6 dry, 4 or 5 moist, and chroma of 4 through 6 dry and 2 through 4 moist.

SOIL INTERPRETATIONS RECORD

MLRA(S) 485 KIND OF UNIT SERIES UNIT NAME DELOP
 STATE ARIZONA RECORD NO. 485 AUTHOR(S) JKR DATE 7-79 REVISED UNIT MODIFIER
 CLASSIFICATION AND BRIEF SOIL DESCRIPTION

THE DELOP SOILS CONSIST OF DEEP, WELL DRAINING SANDS THAT FORMED IN ALLUVIAL AND EOLIAN MATERIAL DERIVED FROM SAND AND SANDSTONE ON MOUNTAINS AND PLATEAUS. ELEVATION IS 6200 TO 6400 FEET. AVERAGE ANNUAL AIR TEMPERATURE IS ABOUT 50 F. AVERAGE ANNUAL PRECIPITATION IS 12 TO 13 INCHES. FROST-FREE SEASON IS 120 TO 150 DAYS. TYPICALLY, THE SURFACE LAYER IS 2 TO 4 INCHES THICK. THE SUBSOIL IS BROWN AND DARK BROWN CLAY LOAM ABOUT 25 INCHES THICK. THE SUBSTRATUM IS SAND AND LIGHT BROWN LOAM AND SAND, LOAM TO 60 INCHES OR MORE. SAND PASSES FROM 2 TO 8 PERCENT.

FOOTNOTES		ESTIMATED SOIL PROPERTIES								
DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT. > 3 IN. (PCT)	PERCENT OF MATERIAL LESS THAN 3 IN. PASSING SIEVE				LIQ. LIMIT	PL. INDEX
					4	10	40	200		
0-2	L	MH, CL-MH	A-4	0	100	100	85-95	60-75	25-35	5-10
0-2	SIL	MH, CL-MH	A-4	0	100	100	90-100	70-90	25-35	5-10
0-2	FS	MH, CL-MH	A-4	0	100	100	70-85	40-55	< 25	1-5
2-39	L, CL, SIL	CL	A-6	0	100	100	85-100	65-85	20-40	10-20
39-60	S	SM	A-2, A-4	0	100	100	60-70	30-40	< 25	1-5

DEPTH (IN.)	CLAY (PCT OF < 2MM)	MOISTURE DENSITY (G/CM ³)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN)	SOIL REACTION	SALINITY (MMH/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSION	
											STEEL	CONCRETE
SAME	18-27	-	0.0-2.0	0.1-0.5	7.5-8.5	< 2		37	5	6	5-1	LOW
DEPTH	18-27	-	0.2-0.6	0.1-0.5	7.5-8.5	< 2		43	5	6	5-1	
AS	18-17	-	2.0-6.0	0.1-0.5	7.5-8.5	< 2	LOW	29	5	3	5-1	
ABOVE	18-35	-	0.2-0.6	0.1-0.5	7.5-8.5	< 2	MODERATE	37				
	18-17	-	2.0-6.0	0.1-0.5	7.5-8.5	< 2	LOW	37				

FLOODING			POOR WATER TABLE			CEMENTED PAV.		BEDROCK		SUBSIDENCE		HYD. GRP.	POTENTIAL FROST ACTION
FREQUENCY	DEPTH	MO.	DEPTH (FT)	NO.	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INITIAL (IN)	TOTAL (IN)		
NO.			> 60					> 60				B	LOW

FOOTNOTES		SANITARY FACILITIES		KEY NO. ONLY		FOOTNOTES		CONSTRUCTION MATERIAL	
SEPTIC TANK ABSORPTION FIELD	MODERATE - PERCS SLOWLY					ROAD		POOR - LOW STRENGTH	
SEWAGE LAUNCH	0-7% SEVERE - SEEPAGE 7+ % SEVERE - SEEPAGE, SLOPE					S		IMPROVABLE - EXCESS FINES	
SANITARY LANDFILL TRENCH	SLIGHT					GRAVEL		IMPROVABLE - EXCESS FINES	
SANITARY LANDFILL AREA	SLIGHT					TOTAL		FAIR - TOO CLAYEY	

FOOTNOTES		WATER MANAGEMENT	
CH. COVER FOR LANDFILL	GOOD		
		FOOTNOTES	
		PUMP RELIEF AREA	SEVERE - SEEPAGE

FOOTNOTES		BUILDING SITE DEVELOPMENT		FOOTNOTES		WATER MANAGEMENT	
SHALLOW EXCAVATION	SLIGHT			EMBANKMENTS DRAINAGE LEVELS			
DWELLINGS WITHOUT BASEMENTS	MODERATE - SHRINK - SWELL	PONDAGE	25	EXCAVATED PONDAGE AFTER FILL			SEVERE - NO WATER
DWELLINGS WITH BASEMENTS	MODERATE - SHRINK - SWELL	DRAIN	25	DRAINAGE			DEEP TO WATER
SMALL COMMERCIAL BUILDINGS	0-4% MODERATE - SHRINK - SWELL 4-8% MODERATE - SHRINK - SWELL, SLOPE			IRRIGATION			0-3% FS: SOIL BLOWING ERODES EASILY 3-3% SIL: ERODES EASILY 0-3% LI: FAVORABLE 3+% : SLOPE
LOCAL ROADS AND STREETS	SEVERE - LOW STRENGTH	TERRACE	25	TERRACES AND DIVERSIONS			SILT LI FAVORABLE FS: SOIL BLOWING
LAWN LANDSCAPING AND GOLF FAIRWAYS		WATER		GRASSED WATERWAYS			FAVORABLE

FOOTNOTES		REGIONAL INTERPRETATIONS	

UNIT MODIFIER		FOOTING	KEY NO ONLY	PLANTING	PLANTING	PLANTING
CAMP AREAS	<input checked="" type="checkbox"/>	SLIGHT	1	2	3	4
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
PICNIC AREAS	<input checked="" type="checkbox"/>	SLIGHT	1	2	3	4
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					
	<input type="checkbox"/>					

PLAYGROUNDS

6-2 1/2' SLT SHL
2-6 1/2' MORE WHITE SLOPE
6 1/2' SEVERE SLOPE

PATHS AND TRAILS

6-2 1/2' SEVERE ERODES EASILY
1 FAVORABLE

MANAGEMENT AND YIELDS HERBAGE OF CROPS AND PASTURE (UNDER E.C. MANAGEMENT)

[illegible][illegible][illegible][illegible]

FOOTNOTES		POTENTIAL PLANT COMMUNITY FRAGMENTS OF FOREST UNDERSTORY VEGETATION			
COMMON PLANT NAME		PLANT SYMBOL	PERCENTAGE COMPOSITION BY DRY WEIGHT, BY CLASS-DETERMINATION PHASE		
1	WESTERN WHITE PINE	ALB			
2	BASS WOOD	BO			
3	GALNUT	ALN			
4	PINE SCRUB	ALN			
5		ALN			
6		ALN			
7		ALN			
8		ALN			
9		ALN			
10		ALN			
11		ALN			
12		ALN			
13		ALN			
14		ALN			
15		ALN			
16		ALN			
17		ALN			
18		ALN			
19		ALN			
20		ALN			
21		ALN			
22		ALN			
23		ALN			
24		ALN			
25		ALN			
26		ALN			
27		ALN			
28		ALN			
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34		ALN			
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37		ALN			
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76		ALN			
77		ALN			
78		ALN			
79		ALN			
80		ALN			
81		ALN			
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83		ALN			
84		ALN			
85		ALN			
86		ALN			
87		ALN			
88		ALN			
89		ALN			
90		ALN			
91		ALN			
92		ALN			
93					

SVII	
101	
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6	
7	

Persayo Series

The Persayo series is classified as Typic Torriorthents, shallow, loamy, mixed (calcareous), mesic. These shallow, well drained soils formed in residuum derived mainly from shale and are on upland hills and breaks. Slope is 5 to 30 percent. Elevation is 6,600 to 7,000 feet. The average annual precipitation is 8 inches. The average annual air temperature is 53 degrees F, the frost-free season is 140 to 160 days.

Typical pedon of Persayo clay loam, from an area of Fruitland-Persayo-Sheppard complex, hilly, 1,760 feet south, 2,400 feet west of the northeast corner of sec. 29, T. 21 N., R. 7 W.

A1--0 to 3 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine continuous pores; moderately alkaline; abrupt smooth boundary.

C1--3 to 10 inches; pale olive (5Y 6/3) silty clay loam, pale olive (5Y 6/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine roots; few fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Cr--10 inches; weathered shale.

Depth of soil over shale ranges from 10 to 20 inches.

The A horizon has textures of clay loam or silty clay loam. It has hue of 10R or 2.5Y, value of 6 or 7 dry, 5 or 6 moist, and chroma of 2 through 4.

The C horizon has textures of silty clay loam, clay loam or silt loam. It has hue of 2.5Y or 5Y, value of 6 or 7 dry and moist, and chroma of 2 or 3.

M. FA(S): 34, 35, 37, 32

FLY. RD. 6-77

TYPIC TORRIDORTMENTS, LOAMY, M; SD (CALCAREOUS), MESIC, SHALLOW

PERSAYO SERIES ARE SHALLOW, WELL-DRAINED SOILS FORMED IN CALCAREOUS LOAMY SEDIMENTS WEATHERED FROM SOFT SEDIMENTARY ROCK. IN A REPRESENTATIVE PROFILE, THEY HAVE ABOUT 14 INCHES OF SILTY CLAY LOAM THAT OVERLIES WEATHERED SHALE AND SILTSTONE. NATURAL VEGETATION IS A THIN STAND OF DESERT SHRUBS AND GRASS. AVERAGE ANNUAL PRECIPITATION IS ABOUT 8 INCHES. SLOPES ARE 2 TO 45 PERCENT.

ESTIMATED SOIL PROPERTIES													
DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT (%)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 10	LIQUID LIMIT	PLAS- TICITY	CLAY (%)	MOIST DENSITY	PERME- ABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)
0-14	SIL. CL	CL	A-6	0-10	20-100	75-100	75-95	60-85	25-40	10-20	25-40	10-20	10-20
0-14	CL-CL	CL, GC	A-6	0-10	60-75	60-75	60-75	45-60	25-40	10-20	25-40	10-20	10-20
14													
DEPTH (IN.)	CLAY (%)	MOIST DENSITY (G/CM ³)	PERME- ABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK- SWELL POTENTIAL (%)	EROSION FACTORS E _r T _r GROUP	ORGANIC MATTER (%)	CORROSION STEEL	POTENTIAL HYDROLYTIC ACIDITY	HYDROLYTIC ACIDITY	POTENTIAL FROST ACTION
0-14	15-35		0.2-0.6	0.15-0.19	7.9-9.0	<8	MODERATE	0.37	1	4L	0.5-1	HIGH	LOW
0-14	27-35		0.2-0.6	0.13-0.16	7.9-9.0	<8	MODERATE	0.32	1	4L	0.5-1	HIGH	LOW
14													
FLOODING				HIGH WATER TABLE				CEMENTED FAN				DETECT	
FREQUENCY	DURATION	MONTHS	DEPTH	DEPTH	KIND	MONTHS	DEPTH	HARDNESS	DEPTH	HARDNESS	INIT.	TOTAL	GRF
NONE			24-6						10-20	FLIPPABLE	-		LOW

SANITARY FACILITIES				CONSTRUCTION MATERIAL			
SEPTIC TANK	2-15%: SEVERE-DEPTH TO ROCK			2-25%: POOR-THIN LAYER, AREA RECLAIM.			
ABSORPTION	15+%: SEVERE-DEPTH TO ROCK, SLOPE			LOW STRENGTH			
FIELDS				25+%: POOR-THIN LAYER, SLOPE, AREA RECLAIM			
SEWAGE	2-7%: SEVERE-DEPTH TO ROCK			UNSUITED-THIN LAYER			
LAGOON	7+%: SEVERE-DEPTH TO ROCK, SLOPE						
AREAS							
SANITARY	2-25%: SEVERE-DEPTH TO ROCK			UNSUITED-THIN LAYER, EXCESS FINES			
LANDFILL	25+%: SEVERE-DEPTH TO ROCK, SLOPE						
(TRENCH)							
SANITARY	2-8%: SLIGHT			2-15%: POOR-AREA RECLAIM			
LANDFILL	8-15%: MODERATE-SLOPE			15+%: POOR-AREA RECLAIM, SLOPE			
(AREA)	15+%: SEVERE-SLOPE						
DAILY	2-15%: POOR-THIN LAYER, AREA RECLAIM			WATER MANAGEMENT			
COVER FOR	15+%: POOR-THIN LAYER, SLOPE, AREA RECLAIM			SLOPE, DEPTH TO ROCK			
LANDFILL				POND			
				RESERVOIR			
				AREA			
BUILDING SITE DEVELOPMENT							
SHALLOW	2-8%: MODERATE-DEPTH TO ROCK			EMBANKMENTS			
EXCAVATIONS	8-15%: MODERATE-DEPTH TO ROCK, SLOPE			DIKES AND			
	15+%: SEVERE-SLOPE			LEVEES			
DWELLINGS	2-8%: MODERATE-SHRINK-SWELL, DEPTH TO ROCK			EXCAVATED			
WITHOUT	8-15%: MODERATE-SHRINK-SWELL, DEPTH TO ROCK,			PONDS			
BASEMENTS	SLOPE			AQUIFER FED			
	15+%: SEVERE-SLOPE						
DWELLINGS	2-8%: MODERATE-SHRINK-SWELL, DEPTH TO ROCK			DRAINAGE			
WITH	8-15%: MODERATE-SHRINK-SWELL, DEPTH TO ROCK,						
BASEMENTS	SLOPE						
	15+%: SEVERE-SLOPE						
SMALL	2-4%: MODERATE-SHRINK-SWELL, DEPTH TO ROCK			IRRIGATION			
COMMERCIAL	4-8%: MODERATE-SHRINK-SWELL, DEPTH TO ROCK,						
BUILDINGS	SLOPE						
	8+%: SEVERE-SLOPE						
LOCAL	2-15%: SEVERE-LOW STRENGTH			TERRACES			
ROADS AND	15+%: SEVERE-SLOPE, LOW STRENGTH			AND			
STREETS				DIVERSIONS			
LAUNDS,				GRASSED			
LANDSCAPING				WATERWAYS			
AND GOLF							
FAIRWAYS							

REGIONAL INTERPRETATIONS

RECREATION DEVELOPMENT	
CAMP AREAS	2-2X: MODERATE-PERCS SLOWLY, DUSTY 6-15X: MODERATE-PERCS SLOWLY, SLOPE, DUSTY 15+X: SEVERE-SLOPE
PICNIC AREAS	2-2X: MODERATE-DUSTY 6-15X: MODERATE-DUSTY, SLOPE 15+X: SEVERE-SLOPE
	PLAYGROUNDS PATHS AND TRAILS
	2-2X: SEVERE-DEPTH TO ROCK 6+X: SEVERE-DEPTH TO ROCK, SLOPE 2-15X: MODERATE-TOO CLAYEY, DUSTY 15-25X: MODERATE-TOO CLAYEY, SLOPE, DUSTY 25+X: SEVERE-SLOPE

[illegible]

FIRELAND SUITABILITY									
CLASS- DETERMINING PHASE	DRC SYN	MANAGEMENT PROBLEMS					POTENTIAL PRODUCTIVITY		TREES TO PLANT
		EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORTALITY	WINDTH. HAZARD	PLANT COMPET.	COMMON TREES	SITE INDEX	
WARM	40	SEVERE	SLIGHT	SEVERE	MODERATE	SLIGHT	ONESEED JUNIPER PINYON	60 -	

[illegible]

CLASS- DETERMINING PHASE	POTENTIAL AS HABITAT FOR BIRDS								POTENTIAL AS HABITAT FOR BEES			
	GRAIN & SEED	GRASS & LEGUMES	WILD FLEET	PARKS TREES	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATER	OPEN WILDLIFE	WOODLAND WILDLIFE	WETLAND WILDLIFE	RANGE WILDLIFE
ALL	V. POOR	V. POOR	POOR	-	-	POOR	V. POOR	V. POOR	V. POOR	-	V. POOR	POOR

PERCENTAGE COMPOSITION (BY WEIGHT) BY CLASS DETERMINING PHASE					
COMMON PLANT NAME	PLANT	STCL, SIL, CL		GR-CL	BARK
	SYMBOL				
	(NLSPH)				
GALLETA	HJJA	35		-	10
INDIAN RICEGRASS	DRHY	8		10	10
SALINE WILDRYE	ELSA	8		-	
BOTTLEBRUSH SQUIRRELTAIL	SIMY	8		8	8
LOW PHLOX 1/	PHHC	8			
SHADSCALE 1/	ATCO	15			
DOUGLAS RABBITBRUSH	CHVI8	8			
GARDNER SALTBUS-	ATMU2	8		15	
BIG SAGEBRUSH	AFTR2	-		8	8
BLUE GRAMA	BDCG2	8		8	
LOW RABBITBRUSH	CHVIH2	-		8	
BUD SAGEBRUSH	ARSP5	8		10	
WESTERN WHEATGRASS	AGSK	8		20	
ANTELOPE BITTERBRUSH	PUTR2				10
NEEDLE PANTHRPLAC	STCR4				10

POTENTIAL PRODUCTION (LBS./AC. DRY WT.)	650	800	950		
FAVORABLE YEARS					
NORMAL YEARS	800	300	250		
UNFAVORABLE YEARS	900	160	150		

1 NOT USUALLY UTILIZED BY CATTLE OR SHEEP.

Riverwash

This miscellaneous area consists of unstabilized sandy, silty, clayey or gravelly sediments which are flooded and reworked by water on floodplains, stream and river beds and arroyos. Slope is 0 to 3 percent. Elevation is 6,000 to 6,900 feet. The average annual precipitation is 8 to 12 inches. The average annual air temperature is 50 to 53 degrees F, and the frost-free season is 120 to 160 days.

Reference location of Riverwash is the southwest corner of sec. 2, T. 24 N., R. 6 W.

Rock outcrop

This miscellaneous area consists of bare exposures of sandstone on cliffs, breaks, bluffs, ridges and large massive areas of exposed bedrock. Slope is 5 to 100 percent. Elevation is 6,100 to 7,200 feet. The average annual precipitation is 8 to 12 inches. The average annual air temperature is 50 to 53 degrees F, and the frost-free season is 120 to 160 days.

Reference location of Rock outcrop is the southwest corner of sec. 30, T. 23 N., R. 6 E.

Sheppard Series

The Sheppard series is classified as Typic Torripsamments, mixed, mesic. These deep, excessively drained soils formed in sandy eolian materials derived mainly from shale and sandstone and are on upland hills and breaks. Slope is 5 to 30 percent. Elevation is 6,600 to 7,000 feet. The average annual precipitation is 8 inches. The average annual air temperature is 53 degrees F, and the frost-free season is 140 to 160 days.

Typical pedon of Sheppard loamy fine sand, from an area of Fruitland-Persajo-Sheppard complex, hilly, 1,560 feet south, 2,400 feet east of the northwest corner of sec. 29, T. 21 N., R. 7 W.

A1--0 to 2 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; weak fine granular structure; few very fine roots; few very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

C1--2 to 20 inches; light yellowish brown (10YR 6/4) loamy fine sand, yellowish brown (10YR 5/4) moist; single grained; loose; few very fine roots; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C2--20 to 35 inches; pale brown (10YR 6/3) loamy fine sand, yellowish brown (10YR 5/4) moist; single grained; loose; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C3--35 to 60 inches; grayish brown (10YR 5/2) loamy fine sand, dark grayish brown (10YR 4/2) moist; single grained; loose; moderately alkaline.

Depth to bedrock is greater than 60 inches.

The A horizon has textures of loamy fine sand and loamy sand. It has values of 5 or 6 dry, 5 or 4 moist, and chroma of 3 or 4.

The C horizon has textures of loamy fine sand and loamy sand. It has values of 5 or 6 dry, 4 or 5 moist, and chroma of 2 through 4.

SOILS SECTION
OFFICIAL FILE

SHEPPARD SERIES

MLRA(S): 37
REV. CVP, 3-77
TYPIC TERRIPSANMENTS, MIXED, MESIC

THE SHEPPARD SERIES CONSISTS OF DEEP, SOMEWHAT EXCESSIVELY DRAINED SOILS FORMED IN AECIAN DEPOSITS. THEY OCCUPY SANDY RIDGES ON MESA AND PLATEAU. ELEVATIONS RANGE 5000 TO 6000 FEET. AAR RANGES 6 TO 10 INCHES. AWT IS ABOUT 53 F. APPS RANGES 140 TO 160 DAYS. A TYPICAL P.O.W. IS LIGHT YELLOWISH BROWN LOAMY FINE SAND TO 1 INCH. THE UNDERLYING LAYER IS LIGHT YELLOWISH BROWN LOAMY FINE SAND AND FINE SAND TO 62 INCHES OR MORE. SLOPES RANGE 3 TO 60 PERCENT.

ESTIMATED PROPERTIES												
DEPTH (IN.)	USDA TEXTURE		UNIFIT	AASHTO	FRACT. > 3 IN. (FT)	PERCENT OF MATERIAL LESS THAN 2" PASSING SIEVE NO.				LIQUID LIMIT	PLASTICITY	
0-1	LS, LF		SM	A-2	0	100	100	65-85	15-30	15-20	15-20	
1-62	LFSS, LS, FS		SM	A-2	0	100	100	65-85	15-30	15-20	15-20	
DEPTH (IN.)	CLAY (PCT)	MOIST. BULK DENSITY (G/CM ³)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHLS/CM)	SHRINK-SWELL POTENTIAL (%)	EROSION FACTOR	ORGANIC MATTER (PCT)	CORROSION	HYD. POTENTIAL	HYD. RESISTANCE
0-1	5-10	-	6.0-20	0.06-0.08	7.0-8.4	<2	LOW	15	5	2	-	HIGH
1-62	5-10	-	6.0-20	0.06-0.08	7.0-8.4	<2	LOW	15	5	2	-	HIGH
FLOODING				HIGH WATER TABLE				CEMENTED PAN		FLOODING		RESISTANCE
				DEPTH (FT)	KIND	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INIT.	TOTAL GRP
FREQUENCY				DURATION		MONTHS	(IN)		(IN)		(IN)	(IN)
NONE						24			24		-	100

SANITARY FACILITIES				CONSTRUCTION MATERIAL			
SEPTIC TANK	0-8%: SLIGHT 8-15%: MODERATE-SLOPE 15%+: SEVERE-SLOPE			ROADFILL	0-15%: GOOD 15-25%: FAIR-SLOPE 25%+: POOR-SLOPE		
SEWAGE LAGOON AREAS	0-7%: SEVERE-SEEPAGE 7%+: SEVERE-SEEPAGE, SLOPE			SAND	POOR-EXCESS FINES		
SANITARY LANDFILL (TRENCH)	0-25%: SEVERE-TOO SANDY 25%+: SEVERE-TOO SANDY, SLOPE			GRAVEL	UNSUITED-EXCESS FINES		
SANITARY LANDFILL (AREA)	0-4%: SLIGHT 4-15%: MODERATE-SLOPE 15%+: SEVERE-SLOPE			TOPSOIL	0-8%: FAIR-TOO SANDY 8-15%: FAIR-SLOPE, TOO SANDY 15%+: POOR-SLOPE		
DAILY COVER FOR LANDFILL	0-8%: FAIR-TOO SANDY 8-15%: FAIR-TOO SANDY, SLOPE 15%+: POOR-SLOPE			PLND RESERVOIR AREA	0-6%: SEEPAGE 6%+: SEEPAGE, SLOPE		

FLOODING SITE DEVELOPMENT				WATER MANAGEMENT			
SHALLOW EXCAVATIONS	0-15%: SEVERE-CUTBANKS CAVE 15%+: SEVERE-CUTBANKS CAVE, SLOPE			EMBANKMENTS DIKES AND LEVEES	SEEPAGE, PIPING		
DWELLINGS WITHOUT BASEMENTS	0-8%: SLIGHT 8-15%: MODERATE-SLOPE 15%+: SEVERE-SLOPE			EXCAVATED PONDS AQUIFER FED	NO WATER		
DWELLINGS WITH BASEMENTS	0-8%: SLIGHT 8-15%: MODERATE-SLOPE 15%+: SEVERE-SLOPE			DRAINAGE	0-6%: FAIR-ABELL 6%+: SLOPE		
SMALL COMMERCIAL BUILDINGS	0-4%: SLIGHT 4-8%: MODERATE-SLOPE 8%+: SEVERE-SLOPE			IRRIGATION	0-25%: FAST INTAKE, SOIL FLOWING, DROUGHTY 25%+: SLOPE, FAST INTAKE, DROUGHTY		
LOCAL ROADS AND STREETS	0-4%: SLIGHT 4-15%: MODERATE-SLOPE 15%+: SEVERE-SLOPE			TERRACES AND DIVERSIONS	0-12%: TOO SANDY, SOIL FLOWING 12%+: SLOPE, TOO SANDY, SOIL FLOWING		
LANDSCAPING AND GOLF FAIRWAYS				GRAVELLED WATERWAYS	0-25%: DROUGHTY 25%+: SLOPE, DROUGHTY		

REGIONAL INTERPRETATIONS

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CLASS- DETERMINING PHASE	CAPABILITY AND YIELD BASED ON CLASS OF CROP AND MATURITY													
	CORN		ALFALFA		CORN		PASTURE		APPLE		POTATO		GRASS	
	YIELD	PHASE	YIELD	PHASE	YIELD	PHASE	YIELD	PHASE	YIELD	PHASE	YIELD	PHASE	YIELD	PHASE
70	45	-	5.0	-	11	-	5.0	-	500	-	200	-	65	

[illegible]

PLANT	COLLECTOR	DATE	LOCALITY	USE	REMARKS
ORIENTAL ADULFUTAE	101	1951	SIIBERIAN EL	15	RUSSIAN-CLIVE
MULTIFLOA ROS.	102	1951	LOMBARDY POLAN	16	FLORA P. J. J. J.
					13 ALSTRIA PINE

CLASS -		PLANT HABITAT SUITABILITY									
DETERMINING PHASE		POTENTIAL FOR HABITAT SUITABILITY						POTENTIAL FOR HABITAT SUITABILITY			
		GRAIN & GRASS	WILD	WILD	WILD	WILD	WILD	WILD	WILD	WILD	WILD
		FAIR	GOOD	FAIR	GOOD	FAIR	GOOD	FAIR	GOOD	FAIR	GOOD
100	100	V. POOR	V. POOR	POOR	-	-	POOR	V. POOR	V. POOR	V. POOR	-
100	100	V. POOR	V. POOR	POOR	-	-	POOR	V. POOR	V. POOR	V. POOR	-

POTENTIAL NATURAL PLANT COMMUNITY (SANDHILL COUNTRY VEGETATION)		POTENTIAL COMMUNITY (SANDHILL COUNTRY VEGETATION)		POTENTIAL COMMUNITY (SANDHILL COUNTRY VEGETATION)		POTENTIAL COMMUNITY (SANDHILL COUNTRY VEGETATION)	
COMMON PLANT NAME	PLANT SYMBOL	PERCENTAGE COVER	PERCENTAGE COVER	PERCENTAGE COVER	PERCENTAGE COVER	PERCENTAGE COVER	PERCENTAGE COVER
INDIAN RICEGRASS	CRHY	20					
SANDHILL BUDY	WUPU2	5					
SAND DROPSIDE	SPDR	10					
GIANT DROPSIDE	SFG1	15					
NEEDLEANDTHREAD	STCO4	10					
ALKALI SACATEN	SPAT	15					
BOTTLEBRUSH SQUIRRELTAIL	STHY	5					
OPPON-TEA	FRBU	5					
SAND SAGEBRUSH	AWF12	5					
BLACK SAGEBRUSH	AWAN	2					
FLOWING SALTBRUSH	ATCA2	5					
BIG SAGEBRUSH	ARTF2	3					
POTENTIAL PRODUCTION (LBS./AC. DRY WT.)		1000					
FAVORABLE YEARS		700					
NORMAL YEARS		400					
UNFAVORABLE YEARS							

- 1 SOILS ARE UNSTABLE AND CUT BANKS CAVE.
- 2 PERMEABILITY IS NOT A LIMITING SOIL PROPERTY IN ARID AREAS.

Shingle Series

The Shingle series is classified as Ustic Torriorthents, loamy, mixed (calcareous), mesic, shallow. These shallow, well drained soils formed in residuum derived mainly from shale and are on upland hills, breaks, and mesas. Slope is 0 to 40 percent. Elevation is 6,100 to 7,200 feet. The average annual precipitation is 12 inches. The average annual air temperature is 50 degrees F, and the frost-free season is 120 to 150 days.

Typical section of Shingle clay loam, from an area of Travessilla-Shingle-Celco association, moderately steep, 700 feet south, 1,200 feet west of the northeast corner of sec. 32, T. 29 N., R. 6 W.

A1--0 to 3 inches; grayish brown (2.5Y 5/2) clay loam, dark gray, moist (2.5Y 4/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1--3 to 10 inches; grayish brown (2.5Y 5/2) clay loam, grayish brown (2.5Y 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine continuous pores; slightly effervescent with disseminated calcium carbonate; strongly alkaline; abrupt smooth boundary.

0.5-1.0 inches; grayish brown shale

Depth to shale is 6 to 20 inches

The A horizon has textures of loam, clay loam, or silty clay loam. It has hue of 10YR or 2.5Y, value of 5 or 6 dry, 3 through 5 moist, and chroma of 2 through 4.

The C horizon has textures of clay loam or silty clay loam. It has hue of 10YR through 5Y, value of 5 or 6 dry, 4 or 5 moist, and chroma of 2 through 4.

MLRA(S): 22, 67, 22

ELV. JFY. 4-77

USTIC TERRICHERENTS, LOAMY, MIXED (CALCAREOUS), MESIC, SHALLOW

THE SHINGLE SERIES ARE WELL DRAINED SOILS FORMED IN RESIDUUM FROM SHALE OR INTERBEDDED SANDSTEN, AND SHALE ON UPLANDS. ELEVATION IS 4000 TO 5200 FEET. PFT IS 10 TO 16 INCHES. MAIST IS 47 TO 58 F., AND PFS IS 105 TO 140 DAYS. TYPICALLY, THE PROFILE IS LIGHT BROWNISH GRAY TO LIGHT YELLOWISH-BROWN CLAY LOAM UNDERLAIN BY BEDROCK AT A DEPTH OF 15 INCHES. SLOPES ARE 0 TO 40 PERCENT.

ESTIMATED SOIL PROPERTIES											
DEPTH (IN.)	LSCA TEXTURE	UNIFIED	AASHTO	FRAC. > 3 IN. (PCT)	PERCENT OF MATERIAL LESS THAN 2.0 MILLIMETER PASSING SIEVE NO.					LIQUID LIMIT	PLASTICITY INDEX
0-4	L	ML	A-4	0-5	75-100	75-100	70-95	55-75	25-35	25-35	NP-10
0-4	FSL	CL	A-4	0-5	75-100	75-100	70-85	40-50	20-20	20-20	NP-5
0-4	CL, GF-CL	CL	A-4	0-5	75-100	75-100	70-100	55-80	35-40	35-40	15-20
4-15	CL, L	CL	A-6	0	75-100	75-100	65-100	50-80	30-40	30-40	10-20
15	UNE										
DEPTH (IN.)	CLAY	MOIST. EQUIV. DENSITY (G/CM ³)	PERMEABILITY (CM/HR)	AVAILABLE WATER CAPACITY (IN. IN)	SOIL REACTION (PH)	SALINITY (MMHDS/CM)	SHELLS SWELL POTENTIAL	PRECIPITATION (IN.)	ORGANIC MATTER (PCT)	CORROSION	
0-4			0.6-2.0	0.10-0.15	7.4-9.0	<2	LOW	0.32	2	4L	
0-4			0.6-2.0	0.13-0.15	7.4-9.0	<2	LOW	0.32	2	3	
0-4			0.6-2.0	0.19-0.21	7.4-9.0	<2	MODERATE	0.32	2	4L	
4-15			0.6-2.0	0.16-0.21	7.9-9.0	<2	MODERATE	0.49			
15											
FLOODING											
HIGH WATER TABLE				ROADS				HYDROLOGICAL			
DEPTH (IN.)	KIND	MONTHS	DEPTH (IN.)	HARDNESS	DEPTH (IN.)	HARDNESS	INIT.	TOTAL	CRF	FROST	POTENTIAL
0-4			0-4		0-4		11-20	11-20			
4-15			4-15		4-15						
15			15		15						

SANITARY FACILITIES		CONSTRUCTION MATERIAL	
SEPTIC TANK ABSORPTION FIELD	0-15%: SEVERE-DEPTH TO ROCK 15+%: SEVERE-SLOPE,DEPTH TO ROCK	ROADFILL	0-25%: ROCK-THIN LAYER,AREA RECLAIM 25+%: ROCK-SLOPE,THIN LAYER,AREA RECLAIM
SEWAGE LAGOON AREAS	0-7%: SEVERE-DEPTH TO ROCK 7+%: SEVERE-SLOPE,DEPTH TO ROCK	SAND	UNSLITED-EXCESS FINE
SANITARY LANDFILL (TRENCH)	0-10%: SEVERE-DEPTH TO ROCK 25+%: SEVERE-SLOPE,DEPTH TO ROCK	GRAVEL	UNSLITED-EXCESS FINE
SANITARY LANDFILL (AREA)	0-10%: SLIGHT 6-15%: MODERATE-SLOPE 15+%: SEVERE-SLOPE	TOPSOIL	0-15%: ROCK-AREA RECLAIM 15+%: ROCK-SLOPE,AREA RECLAIM
DAILY COVER FOR LANDFILL	0-15%: ROCK-THIN LAYER,AREA RECLAIM 15+%: ROCK-SLOPE,THIN LAYER,AREA RECLAIM	POND RESERVOIR AREAS	WATER MANAGEMENT 0-2%: DEPTH TO ROCK 2+%: SLOPE,DEPTH TO ROCK

BUILDING SITE DEVELOPMENT				WATER MANAGEMENT			
SHALLOW EXCAVATIONS	0-8%: MODERATE-DEPTH TO ROCK	EMBANKMENTS DIKES AND LEVEES	0-2%: MODERATE-DEPTH TO ROCK				LOW STRENGTH, THIN LAYER
	8-15%: MODERATE-SLOPE, DEPTH TO ROCK		15-20%: SEVERE-SLOPE				
DWELLINGS WITHOUT BASEMENTS	0-8%: MODERATE-DEPTH TO ROCK	EXCAVATED PONDS AQUIFER FED	0-8%: MODERATE-DEPTH TO ROCK				NO WATER
	8-15%: MODERATE-SLOPE, DEPTH TO ROCK		15-20%: SEVERE-SLOPE				
DWELLINGS WITH BASEMENTS	0-8%: MODERATE-DEPTH TO ROCK	DRAINAGE	0-2%: DEPTH TO ROCK				2-3%: DEPTH TO ROCK, SLOPE
	8-15%: MODERATE-SLOPE, DEPTH TO ROCK		15-20%: SEVERE-SLOPE				
SMALL COMMERCIAL BUILDINGS	0-4%: MODERATE-DEPTH TO ROCK	IRRIGATION	0-2%: ROOTING DEPTH				2-3%: SLOPE, ROOTING DEPTH
	4-8%: MODERATE-SLOPE, DEPTH TO ROCK		8-15%: SEVERE-SLOPE				
LOCAL ROADS AND STREETS	0-8%: MODERATE-DEPTH TO ROCK	TERRACES AND DIVERSIONS	0-12%: DEPTH TO ROCK				12-20%: SLOPE, DEPTH TO ROCK
	8-15%: MODERATE-SLOPE, DEPTH TO ROCK		15-20%: SEVERE-SLOPE				
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	0-8%: MODERATE-DEPTH TO ROCK	GRASSED WATERWAYS	0-8%: ROOTING DEPTH				8-15%: SLOPE, ROOTING DEPTH
	8-15%: MODERATE-SLOPE, DEPTH TO ROCK		15-20%: SEVERE-SLOPE				

REGIONAL INTERPRETATIONS

	CLASSIFICATION	DEVELOPMENT
CAMP AREAS	0-8% L.F.SL: SLIGHT 8-15% L.F.SL: MODERATE 0-8% CL: MODERATE-TOO CLAYEY 8-15% CL: MODERATE-SLOPE, TOO CLAYEY 15+% SEVERE-SLOPE	PLAYGROUNDS
PICNIC AREAS	0-8% L.F.SL: SLIGHT 8-15% L.F.SL: MODERATE-SLOPE 0-8% CL: MODERATE-TOO CLAYEY 8-15% CL: MODERATE-SLOPE, TOO CLAYEY 15+% SEVERE-SLOPE	PATHS AND TRAILS

CLASS- DETERMINING PHASE	CAPABILITY	CHASS HAY		PASTURE											
		(TONS)		(ALM)											
0-21	6E	4E		2		5									
3-101	6E	6E		1.5		4									
10-151	7E	6E		1.5		4									
15+1	7E														

CLASS- DETERMINING PHASE	CPL SYM	MANAGEMENT FACTORS				POTENTIAL PRODUCTIVITY		SITE INDEX	TREES TO PLANT
		EROSION FACTOR	EQUIP. LIMIT	SEEDLING MORTALITY	WINDTH. MANAGE	PLANT COMPET.	COMMON TREES		
							NONE		

CLASS- DETERMINING PHASE	CPL SYM	SEEDING		HT	SEEDING		HT	SEEDING		HT
		SEEDING	SEEDING		SEEDING	SEEDING		SEEDING	SEEDING	
		NONE								

CLASS- DETERMINING PHASE	POTENTIAL AS HABITAT SUSTAINABILITY							POTENTIAL AS HABITAT SUSTAINABILITY			
	GRAIN & SLIP	GRASS & SLIP	WILD HERB.	PAVING TRESS	CONIFER PLANTS	SHRUBS	WETLAND PLANTS	SHALLOW WATERS	OPENED WATERS	WOODS WATERS	WETLAND WATERS
0-21	POOR	POOR	FAIR	-	-	FAIR	POOR	V. POOR	POOR	-	V. POOR
0-101	POOR	POOR	FAIR	-	-	FAIR	POOR	V. POOR	POOR	-	V. POOR
10+1	POOR	POOR	FAIR	-	-	FAIR	V. POOR	V. POOR	POOR	-	V. POOR

COMMON PLANT NAME	PLANT SYMBOL (L.F.SL)	POTENTIAL COMPETITION (L.F.SL)		BY CLASS DETERMINING PHASE
		WOODS	WOODS	
MUTTON BLUEGRASS	POFE			
GALLETA	HIJA			
BLUE GRAMA	BOLR2			
MOUNTAIN MAHOGANY	CERCO			
	AHFF			
	PPGG			
	SSSS			

POTENTIAL PRODUCTION (LBS./AC. DRY WT):		POTENTIAL PRODUCTION (LBS./AC. DRY WT):	POTENTIAL PRODUCTION (LBS./AC. DRY WT):
FAVORABLE YEARS	NORMAL YEARS		
		300	200
		100	

Shiprock Series

The Shiprock series is classified as Typic Haplargids, coarser-loam, mixed, mesic. These deep, well drained soils formed in alluvial and eolian materials derived mainly from shale and sandstone and are on mesas and plateaus. Slopes are 5 to 8 percent. Elevation is 6,600 to 7,000 feet. The average annual precipitation is 8 inches. The average annual air temperature is 53 degrees F, and frost-free season is 140 to 160 days.

Typical pedon of Shiprock fine sand, loam, from an area of Desert-Shiprock association, gently sloping, 500 feet south and 2,400 feet west of the northeast corner of sec. 29, T. 22 N., R. 6 W.

A1--0 to 2 inches; light yellowish brown (10YR 6/4) fine sand, loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable; few very fine roots; few very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

B1--2 to 4 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structures; soft, very friable; common very fine and fine roots; common very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

Bt--4 to 12 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; common fine continuous pores; few thin clay films on faces of peds; moderately alkaline; clear smooth boundary.

B3--12 to 18 inches; yellowish brown (10YR 5/4) sandy loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable; few very fine and fine roots; few very fine continuous pores; moderately alkaline; clear smooth boundary.

C1ca--18 to 34 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable; few very fine roots; strongly effervescent with disseminated calcium carbonate; strongly alkaline; clear gradual boundary.

C2ca--34 to 60 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; slightly hard, firm; strongly effervescent with disseminated calcium carbonate; strongly alkaline.

Depth to bedrock is greater than 60 inches. The solum thickness ranges from 10 to 25 inches.

The A horizon has textures of fine sandy loam or sandy loam. It has hue of 7.5YR or 10YR, value of 5 or 6 dry, 4 or 5 moist, and chroma of 4 or 5.

The B horizon has textures of sandy loam or fine sandy loam. It has hue of 7.5YR or 10YR, value of 5 or 6 dry, 4 or 5 moist, and chroma of 3 or 4.

The C horizon has textures of sandy loam or fine sandy loam. It has hue of 7.5YR or 10YR, value of 5 or 6 dry, 4 or 5 moist, and chroma of 3 or 4.

MLRA(S): 37

REV. TLP.CWA, 1-78

SHIPROCK SERIES

TYPIC MAPLARGIDS, COARSE-LOAMY, MIXED, MESIC

THE SHIPROCK SERIES CONSISTS OF DEEP, WELL DRAINED SOILS. THEY FORMED IN ALLUVIAL DEPOSITS ON MOUNTAINS AND PLATEAUS. ELEVATIONS RANGE FROM 5600 TO 6400 FEET. MEAN ANNUAL PRECIPITATION RANGES FROM 8 TO 10 INCHES. MEAN ANNUAL AIR TEMPERATURES RANGE FROM 50 TO 54 DEGREES F., AND THE FROST-FREE SEASON IS 140 TO 160 DAYS. TYPICALLY, THE SURFACE LAYER IS PALE BROWN FINE SANDY LOAM 2 INCHES THICK. THE SUBSOIL IS A BROWN FINE SANDY LOAM 12 INCHES THICK. THE SUBSTRATUM IS A BROWN AND LIGHT YELLOWISH BROWN FINE SANDY LOAM 12 INCHES THICK. SLOPES ARE 0 TO 15 PERCENT.

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS 20 PASSING SIEVE NO. 40 (PCT)	LIQUID LIMIT	PLASTICITY
0-2	SL, FS	SM, SH-SC	A-2, A-4	0	100	100	75-90 30-50
0-2	LS, LFS	SM, SH-SC	A-2, A-3	0	100	100	65-80 5-30
2-60	SL, FS	SM, SH	A-2, A-4	0	100	100	75-90 30-50

DEPTH (IN.)	CLAY (PCT)	MOIST BULK DENSITY (G/CM ³)	PERME- ABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMH/CM)	SHRINK- SWELL POTENTIAL	EROSION FACTORS F, I, GE, C, E	WIND EROD. MATTER (PCT)	ORGANIC MATTER (PCT)	CORROSION
0-2	10-20		2.0-6.0	0.09-0.12	7.4-8.4	<2	LOW	.24	5	2	.5-.6
0-2	10-15		6.0-20	0.06-0.09	7.4-8.4	<2	LOW	.15	5	2	.5-.6
2-60	10-20		2.0-6.0	0.09-0.12	7.4-9.0	<4	LOW	.24			

FLOODING			HIGH WATER TABLE			SEPARATED PAN		PERMEABILITY		SUBSIDENCE		HYDRO- POTENTIAL	
FREQUENCY	DURATION	MONTHS	DEPTH (FT)	KIND	MONTHS	DEPTH (IN)	HARDNESS	DEPTH (IN)	HARDNESS	INIT.	TOTAL	GRP	FROST ACTION
NONE			24					24					

SANITARY FACILITIES		CONSTRUCTION MATERIAL	
SEPTIC TANK ABSORPTION FIELDS	0-8%: SLIGHT 8+%: MODERATE-SLOPE	ROADFILL	FAIR-LOW STRENGTH
SEWAGE LAGOON AREAS	0-7%: SEVERE-SEEPAGE 7+%: SEVERE-SLOPE, SEEPAGE	SAND	POOR-EXCESS FINES
SANITARY LANDFILL (TRENCH)	SLIGHT	GRAVEL	UNSUITE
SANITARY LANDFILL (AREA)	0-8%: SLIGHT 8+%: MODERATE-SLOPE	TOPSOIL	0-8%: GOOD 8+%: FAIR-SLOPE
DAILY COVER FOR LANDFILL	0-8%: GOOD 8+%: FAIR-SLOPE	POND RESERVOIR AREA	0-8%: SEEPAGE 6+%: SLOPE, SEEPAGE

BUILDING SITE DEVELOPMENT		WATER MANAGEMENT	
SHALLOW EXCAVATIONS	0-8%: SLIGHT 8+%: MODERATE-SLOPE	EMBANKMENTS DIKES AND LEVEES	FAVORABLE
DWELLINGS WITHOUT BASEMENTS	0-8%: SLIGHT 8+%: MODERATE-SLOPE	EXCAVATED PONES AQUIFER FED	NO WATER
DWELLINGS WITH BASEMENTS	0-8%: SLIGHT 8+%: MODERATE-SLOPE	DRAINAGE	0-2%: FAVORABLE 2+%: SLOPE
SMALL COMMERCIAL BUILDINGS	0-4%: SLIGHT 4-8%: MODERATE-SLOPE 8+%: SEVERE-SLOPE	IRRIGATION	0-2%: DRAUGHTY, SOIL ERODING 2+%: SLOPE, DRAUGHTY, SOIL ERODING
LOCAL ROADS AND STREETS	0-8%: SLIGHT 8+%: MODERATE-SLOPE	TERRACES AND DIVERSIONS	0-8%: SOIL ERODING 8+%: SLOPE, SOIL ERODING
LAUNDS, LANDSCAPING AND GOLF FAIRWAYS		GRASSED WATERWAYS	

REGIONAL INTERPRETATIONS	

RECREATIONAL DEVELOPMENT

CAMP AREAS	0-2% SLIGHT	PLAYGROUNDS	0-2% SLIGHT
	8+% MODERATE-SLOPE		2-6% MODERATE-SLOPE
PICNIC AREAS	0-2% SLIGHT	PATHS AND TRAILS	SLIGHT
	8+% MODERATE-SLOPE		

CAPABILITY AND YIELDS PER ACRE OF CEREALS AND PASTURES (HIGH LEVEL MANAGEMENT)

CLASS- DETERMINING PHASE	CAPABILITY		ALFALFA		CORN		GRAIN SORGHUM		PASTURE		CORN		APPLES	
	BILITY		HAY		SILAGE		SORGHUM		(ALU)		(LU)		(P.)	
	NIER	IEE	NIER	IEE	NIER	IEE	NIER	IEE	NIER	IEE	NIER	IEE	NIER	IEE
0-2% SL.FSL	7E	-	-	7.0	-	21	-	107	-	14	-	115	-	700
2-5% SL.FSL	7E	-	-	7.0	-	21	-	107	-	14	-	115	-	700
5-8% SL.FSL	7E	4E	-	6.4	-	19	-	102	-	12	-	111	-	700
8+%	7E	-	-	-	-	-	-	-	-	-	-	-	-	-
0-2% LS.LFS	7E	3E	-	6.7	-	18	-	94	-	13	-	105	-	630
2-5% LS.LFS	7E	4E	-	6.6	-	18	-	94	-	13	-	105	-	630

WINDBREAK SUSTAINABILITY

CLASS- DETERMINING PHASE	CRO SYM	MANAGEMENT PRACTICES						POTENTIAL PERMANENCY		TREES TO PLANT
		EROSION	EXPOS.	SEEDLING	WIND	PLANT		COMMON TREES	SITE	
		HARASS	LIMIT	MOBILITY	HARASS	CUMULAT		NONE		

WINDBREAK

CLASS- DETERMINING PHASE	CRO SYM	SEEDS		MT	SEEDS		MT	SEEDS		MT
		ORIENTAL ANCHVITAE	10		SIERRIAN ELM	45		RUSSIAN-OLIVE	20	
		MULTIFLORA ROSE	4		HONEYLOCUST	45		ROCKY MT. JUNIPER	23	

WINDBREAK HABITAT SUSTAINABILITY

CLASS- DETERMINING PHASE	POTENTIAL FOR HABITAT ELEMENTS										POTENTIAL AS HABITAT FOR			
	GRAIN C	GRASS C	WILD	HARROW	CONIFER	SHRUBS	WETLAND	SHALLOW	OPENED	WOODED	WETLAND	RANGELAND		
	SEED	LEGUME	FEED	TREES	PLANTS		PLANTS	WATER	WILDER	WILDER	WILDER	WILDER		
0-2% LS.LFS	FAIR	GOOD	POOR	-	-	POOR	POOR	V. POOR	V. POOR	-	V. POOR	POOR		
2-5% LS.LFS	FAIR	GOOD	POOR	-	-	POOR	POOR	FAIR	POOR	FAIR	-	POOR	POOR	
5-8% LS.LFS	GOOD	GOOD	POOR	-	-	POOR	GOOD	POOR	FAIR	-	FAIR	POOR		
8+% LS.LFS	FAIR	GOOD	POOR	-	-	POOR	FAIR	V. POOR	FAIR	-	V. POOR	POOR		
0-2% SL.FSL	FAIR	GOOD	POOR	-	-	POOR	POOR	V. POOR	FAIR	-	V. POOR	POOR		

POTENTIAL NATIVE PLANT COMMUNITY (RANGELAND OR FOREST UNRESTRICTED VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL	PERCENTAGE COMPOSITION (DRY WEIGHT) BY CLASS DETERMINING PHASE					
		SL.FSL	LS.LFS				
WINTERFAT	EULAS	5	-				
GIANT DROPSEED	SPG1	10	10				
SAND DROPSEED	SFCR	5	5				
INDIAN RICEGRASS	CRHY	25	15				
OTHER PERENNIAL FORBS	PPFF	5	5				
BLUE GRAMA	BOGR2	20	5				
NEW MEXICO FEATHERGRASS	STNE2	5	5				
PIG SAGEBRUSH	ARTR2	5	-				
GALLETA	HIJA	5	-				
LUNGLEAF EPHEDRA	ERTH	5	5				
FOURWING SALTBUCH	ATCA2	10	5				
SAND BLUESTEM	ANHA	-	15				
LITTLE BLUESTEM	ANSC2	-	15				
SAND SAGEBRUSH	ARF12	-	5				
GEORGINA GRAMA	BOG1	-	10				
POTENTIAL PRODUCTION (LBS./AC. DRY WT.):							
FAVORABLE YEARS		900	1200				
NORMAL YEARS		600	800				
UNFAVORABLE YEARS		300	400				

FOOTNOTES

- A ESTIMATES OF ENGINEERING PROPERTIES BASED ON ANALYTICAL DATA OF 8 PEDONS FROM SAN JUAN COUNTY, NEW MEXICO.
 B PREDICTED YIELDS BASED ON SPRINKLE METHOD OF IRRIGATION ONLY.

Travessilla Series

The Travessilla series is classified as Lithic Ustic Torriorthents, loamy, mixed (calcareous), mesic. These shallow, well drained soils formed in residuum derived mainly from sandstone and are on upland hills, breaks, and mesas. Slope is 0 to 40 percent. Elevation is 6,100 to 7,200 feet. The average annual precipitation is 12 inches. The average annual air temperature is 50 degrees F, and the frost-free season is 120 to 150 days.

Typical pedon of Travessilla sand. loam, from an area of Travessilla-Shingle-Cedar association, moderately steep, 2,084 feet south, 521 feet west of the northeast corner of sec. 1, T. 23 N., R. 7 W.

A1-C to 1 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable; few very fine and fine roots; few very fine and fine continuous pores; moderately alkaline; clear smooth boundary.

C1--1 to 5 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; soft, very friable; few very fine and fine roots; few fine continuous pores; moderately alkaline; clear smooth boundary.

C--5 to 15 inches; light yellowish brown (2.5Y 6/4) sandy loam, light olive brown (2.5Y 5/4) moist; soft, very friable; few very fine and fine roots; few fine continuous pores; slightly effervescent with disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

R--15 inches; pale yellow sandstone.

Depth to sandstone is 6 to 20 inches.

The A horizon has textures of sandy loam, fine sandy loam, or loam. It has hue of 10R or 2.5Y, value of 5 through 7 dry, 4 or 5 moist, and chroma of 3 or 4.

The C horizon has textures of sandy loam or fine sandy loam. It has hue of 10R or 2.5Y, value of 5 or 6 dry, 4 or 5 moist, and chroma of 3 or

THE TRAVESSILLA SERIES CONSISTS OF VERY SHALLOW AND SHALLOW, WELL DRAINED SOILS FORMED IN RESIDUUM FROM SANDSTONE ON UPLAND HILLS, BREAKS AND MESAS. ELEVATIONS RANGE 6400 TO 7200 FEET. A.A.P. RANGES 10 TO 13 INCHES. A.A.A.T. RANGES 40 TO 62 P. A.F.P.S. RANGES 120 TO 150 DAYS. TYPICALLY, THE SURFACE IS A BROWN SANDY LOAM ABOUT 2 INCHES THICK. THE UNDERLYING LAYER IS A BROWN SANDY LOAM ABOUT 10 INCHES THICK, WITH SANDSTONE BEDROCK AT A DEPTH OF 12 INCHES. SLOPE RANGES FROM 0 TO 40 PERCENT.

ESTIMATED SOIL PROPERTIES													
DEPTH (IN.)	USDA TEXTURE		UNIFIED		AASHTO		FRACT PERCENT OF MATERIAL LESS THAN 2" PASSING SIEVE NO. 10				LIQUID LIMIT	PLASTICITY INDEX	
							(PCT)	5	10	40	60		
0-2	L. M.S.		CL-M		A-4		0	100	100	85-95	55-65	20-30	8-10
0-2	SL. FS		SM-SC		A-4		0	100	100	65-75	35-50	20-30	8-10
2-12	L. SL. FSL		CL-M, SM-SC		A-4		0	100	100	70-85	35-55	20-30	8-10
12	UNE		-		-		-	-	-	-	-	-	-
DEPTH (IN.)	CLAY (PCT)	MOIST BULK DENSITY (G/CM ³)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN IN)	SOIL REACTION (PH)	SALINITY (MMHQS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS	WIND ERODIBLE	ORGANIC MATTER (PCT)	CORROSIVITY		
											STEEL	CONCRETE	
0-2	18-27	-	0.0-2.0	0.13-0.17	7.4-8.4	<2	LOW	.24	1	3	MODERATE		
0-2	18-20	-	2.0-6.0	0.08-0.13	7.4-8.4	<2	LOW	.17	1	3			
2-12	19-27	-	2.0-6.0	0.08-0.17	7.4-8.4	<2	LOW	.20					
12	-	-	-	-	-	-	-	-					
FLOODING				HIGH WATER TABLE		CEMENTED PAV		REFUGES		RESISTANCE		HYD	POTENTIAL
FREQ. EMCY		LOCATION		MONTHS	DEPTH (FT)	DEPTH	HARDNESS	DEPTH	HARDNESS	INIT. (IN)	TOTAL GRP	FROST	ACTION
NONE					26.5				6-24	FAE	-	P	LOC
SANITARY FACILITIES						CONSTRUCTION MATERIAL							
SEPTIC TANK ABSORPTION FIELDS	0-15%: SEVERE-DEPTH TO ROCK					ROADFILL	0-25%: POOR-THIN LAYER						
	15%: SEVERE-DEPTH TO ROCK, SLOPE						25%: POOR-THIN LAYER, SLOPE						
SEWAGE LAGOON AREAS	0-7%: SEVERE-DEPTH TO ROCK					SAND	UNSUITE						
	7%: SEVERE-DEPTH TO ROCK, SLOPE												
SANITARY LANDFILL (TRENCH)	0-25%: SEVERE-DEPTH TO ROCK					GRAVEL	UNSUITE						
	25%: SEVERE-DEPTH TO ROCK, SLOPE												
SANITARY LANDFILL (AREA)	0-5%: SLIGHT					TOPSO	0-15%: POOR-AREA RECLAIM, THIN LAYER						
	0-15%: MODERATE-SLOPE						15%: POOR-AREA RECLAIM, SLOPE, THIN LAYER						
DAILY COVER FOR LANDFILL	0-15%: POOR-THIN LAYER					POND RESERVOIR AREA	WATER MANAGEMENT						
	15%: POOR-THIN LAYER, SLOPE						0-5%: DEPTH TO ROCK, SEEPAGE						
						6%: DEPTH TO ROCK, SEEPAGE, SLOPE							
BUILDING SITE DEVELOPMENT													
SHALLOW EXCAVATIONS	0-15%: SEVERE-DEPTH TO ROCK					EMBANKMENTS DIKES AND LEVEES	THIN LAYER						
	15%: SEVERE-DEPTH TO ROCK, SLOPE												
DWELLINGS WITHOUT BASEMENTS	0-15%: SEVERE-DEPTH TO ROCK					EXCAVATED POND AQUIFER FED	NO WATER						
	15%: SEVERE-DEPTH TO ROCK, SLOPE												
DWELLINGS WITH BASEMENTS	0-15%: SEVERE-DEPTH TO ROCK					DRAINAGE	0-2%: DEPTH TO ROCK						
	15%: SEVERE-DEPTH TO ROCK, SLOPE						2%: DEPTH TO ROCK, SLOPE						
SMALL COMMERCIAL BUILDINGS	0-8%: SEVERE-DEPTH TO ROCK					IRRIGATION	0-2%: DROUGHTY, SOIL BLOWING, ROOTING DEPTH						
	8%: SEVERE-DEPTH TO ROCK, SLOPE						2%: DROUGHTY, ROOTING DEPTH, SLOPE						
LOCAL ROADS AND STREETS	0-15%: SEVERE-DEPTH TO ROCK					TERRACES AND DIVERSIONS	0-8%: DEPTH TO ROCK, SOIL BLOWING						
	15%: SEVERE-DEPTH TO ROCK, SLOPE						8%: DEPTH TO ROCK, SLOPE, SOIL BLOWING						
LAWNS, LANDSCAPING AND GOLF FAIRWAYS						GRASSED WATERWAYS							

CAMP AREAS	15+X: SE -DEPTH TO ROCK, SLOPE	PLAYGROUNDS	0-10X SEVERE-DEPTH TO ROCK, SLOPE
ICNIC AREAS	0-15X SEVERE-DEPTH TO ROCK, SLOPE	PATHS AND TRAILS	0-15X SL, FSL: SLIGHT 0-10X L, VFSL: MODERATE-DUSTY 15-25X SL, FSL: MODERATE-SLOPE 15-25X L, VFSL: MODERATE-SLOPE, DUSTY 25-35X SEVERE-SLOPE

CAPABILITY AND YIELDS FOR ASPECT OF CREEK AND PASTURE (FIVE LOTS, PASTURE, POND)													
CLASS- DETERMINING PHASE	CAPABILITY												
	74												

MANAGEMENT FACTORS									
CLASS- DETERMINING PHASE	CH- SYM	EROSION HAZARD	EQUIP. LIMIT	SEEDLING MOBILITY	WINDTH. HAZARD	PLANT COVER	POTENTIAL PRODUCTIONS COMMON TREES	SITE INDEX	TREES TO PLANT
	45	SEVERE	MODERATE	SEVERE	MODERATE	SLIGHT	PINYON, CHINESE JEWEL	70	

CLASS- DETERMINING PHASE	SEEDLING	WINDTH.	PLANT COVER	POTENTIAL PRODUCTIONS
	NONE			

WILDLIFE HABITAT SUITABILITY												
CLASS- DETERMINING PHASE	POTENTIAL FOR HABITAT SUITABILITY								POTENTIAL AS HABITAT FOR			
	GRAIN & GRASS	GRASS & LEAF	WILD PLANT	HARDBOARD TREES	CONIFER PLANTS	SHRUBS	WETLAND	SHALLOW	OPENED	WOODED	WETLAND	RANGE
	POOR	POOR	FAIR	-	FAIR	FAIR	-	-	POOR	FAIR	-	FAIR
WILDLIFE												

POTENTIAL NATIVE PLANT COMMUNITY (RANGE AND FOREST UNDERSTANDING VEGETATION)			
COMMON PLANT NAME	PLANT SYM	PRECIPITATION (INCHES)	
PINYON	PIED	5	
CHINESE JEWEL	JUNC	10	
MOUNTAIN MAHOGANY	CERCO	5	
ANTELOPE BITTERBRUSH	PUTR2	5	
INDIAN RICEGRASS	ORHY	5	
LITTLE BLUESTEM	ANSC2	5	
MUTTONGRASS	POFE	15	
MORMON-TEA	EPHEO	5	
GAMBEL CAX	QUCA	15	
SIDEWAYS GRAMA	BOCU	10	
BLUE GRAMA	BOGR2	5	
OTHER PERENNIAL FORBS	PRFF	10	
OTHER ANNUAL FORBS	AAFF	5	

POTENTIAL PRODUCTION (LBS./AC. DRY WT.)	
FAVORABLE YEARS	400
NORMAL YEARS	300
UNFAVORABLE YEARS	200

FOOTNOTES

TABLE
CLASSIFICATION OF SOILS

<u>Soil Name</u>	<u>Classification</u>
Badland	
Binton	Typic Torrifluvents, fine-loamy, mixed (calcareous), mesic
Blancet	Typic Haplargids, fine-loamy, mixed, mesic
Councilor	Typic Torrifluvents, coarse-loamy, mixed (nonacid), mesic
Doar	Typic Haplargids, fine-loamy, mixed, mesic
Fort Collins	Ustollic Haplargids, fine-loamy, mixed, mesic
Fruitland	Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Gothenburg	Ustertic Torrifluvents, fine, montmorillonitic (calcareous), mesic
Lybrook	Vertic Torrifluvents, fine, montmorillonitic (calcareous), mesic
Navajo	Ustic Torrifluvents, fine-loamy, mixed (calcareous), mesic
Oelap	Ustollic Haplargids, fine-loamy, mixed, mesic
Persayo	Typic Torriorthents, loamy, mixed (calcareous), mesic, shallow
Riverwash	
Rock outcrop	
Sheppard	Typic Torripsamments, mixed, mesic
Shingle	Ustic Torriorthents, loamy, mixed (calcareous), mesic, shallow
Shiprock	Typic Haplargids, coarse-loamy, mixed, mesic
Travessilla	Lithic Ustic Torriorthents, loamy, mixed (calcareous), mesic

TABLE 2
Capability Subclass, Range Site and MLRA for Mapping Units

MAPPING UNIT		CAPABILITY SUBCLASS		RANGE SITE	MLRA
230	Badland		VIIIe	-	WP-1, ND
010	Binton-Councilor-Lybrook association, gently sloping	Binton -	VIIIs	Salt Flats	ND
		Councilor -	VIIe	Sandy	ND
		Lybrook -	VIIIs	Salt Flats	ND
270	Blancot-Councilor-Binton association, gently sloping	Blancot -	VIIe	Loamy	ND
		Councilor -	VIIe	Sandy	ND
		Binton -	VIIIs	Salt Flats	ND
101	Blancot-Lybrook association gently sloping	Blancot -	VIIe	Loamy	ND
		Lybrook -	VIIe	Clayey	ND
150	Doak-Shiprock association, gently sloping	Doak -	VIIe	Loamy	ND
		Shiprock -	VIIe	Sandy	ND
030	Fort Collins-Navacity association, gently sloping	Fort Collins -	VIe	Loamy	WP-1
		Navacity -	VIe	Loamy	WP-1
032	Fort Collins-Oelop-Gobernador association, gently sloping	Fort Collins -	VIe	Loamy Upland	WP-1
		Oelop -	VIc	Loamy Upland	WP-1
		Gobernador -	VIIIs	Salty Bottomland	WP-1

MAPPING UNIT		CAPABILITY SUBCLASS		RANGE SITE	MLRA
180	Fruitland-Persayo-Sheppard complex hilly	Fruitland -	VIIe	Sandy	ND
		Persayo -	VIIe	-	ND
		Sheppard -	VIIe	Deep Sand	ND
031	Gobernador-Fort Collins association gently sloping	Gobernador -	VIIc	Salty Bottomland	WP-1
		Fort Collins -	VIc	Loamy Upland	WP-1
090	Oelop loam, gently sloping		VIc	Loamy Upland	WP-1
240	Riverwash		VIIIe	-	WP-1, ND
220	Rock outcrop-Travessilla-Shingle complex, extremely steep	Rock outcrop -	VIIIe	-	WP-1
		Travessilla -	VIIe	*Woodland (grazed)	WP-1
		Shingle -	VIIe	*Woodland (grazed)	WP-1
110	Travessilla-Shingle-Oelop association moderately steep	Travessilla -	VIIe	*Woodland (grazed)	WP-1
		Shingle -	VIIe	*Woodland (grazed)	WP-1
		Oelop -	VIc	Loamy Upland	WP-1

* Not a range site but a land use.

TABLE 3
Correlation Legend of Mapping Units Between San Juan County & Rio Arriba County

SAN JUAN COUNTY - 618		RIO ARRIBA COUNTY - 652	
Mapping Unit Name	Symbol	Mapping Unit Name	Symbol
Buckle silt loam, gently sloping	500*	Binton-Councilor-Lybrook association, gently sloping	010
Gypsiorthids-Badland-Stumble complex, moderately steep	03A*	Binton-Councilor-Lybrook association, gently sloping	010
Blancot-Notal association, gently sloping	16C*	Blancot-Lybrook association, gently sloping	101
Rock outcrop-Travessilla-Weska complex, extremely steep	04B*	Rock outcrop-Travessilla-Shingle complex, extremely steep	220
Travessilla-Weska-Rock outcrop complex, moderately steep	04A	Travessilla-Shingle-Oelop association moderately steep	110
Penistaja loam, gently sloping	540**	Oelop loam, gently sloping	090
Riverwash	R13	Riverwash	240

* Similar mapping units do not carry across the county boundaries because of changes that have occurred in soils. The county boundary seems to lie in a transitional area. The major components of one mapping unit in San Juan county have changed to become minor components or inclusion in mapping units in Sandoval or Rio Arriba County. The transition area becomes nontransitional further into Rio Arriba and Sandoval Counties.

** Small areas of Penistaja loam mapped out in San Juan County will be mapped out in Rio Arriba County as Oelop if they are of a large extent. In many cases they are not, thus have been mapped as 110, Travessilla-Shingle-Oelop association, moderately steep.



SAN JUAN COUNTY - 618

SANDOVAL COUNTY - 614

Mapping Unit Name	Symbol	Mapping Unit Name	Symbol
Sheppard-Huerfano-Notal complex, gently sloping	07M*	Blancot-Councilor-Binton association, gently sloping	270
Blancot-Notal association, gently sloping	16C*	Blancot-Councilor-Binton association, gently sloping	270
Badland	R3	Badland	230
Riverwash	R13	Riverwash	240
Doak-Sheppard-Shiprock association rolling	19E	Doak-Shiprock association, gently sloping	150
Doak-Avalon association, gently sloping	19D*	Doak-Shiprock association, gently sloping	150
Fruitland-Persayo-Sheppard complex, hilly	R14	Fruitland-Persayo-Sheppard complex, hilly	180

* Similar mapping units do not carry across the county boundaries because of changes that have occurred in soils. The county boundary seems to lie in a transitional area. The major components of one mapping unit in San Juan County have changed to become minor components or inclusion in mapping units in Sandoval or Rio Arriba County. The transition area becomes nontransitional further into Rio Arriba and Sandoval Counties.



Soil Survey Area

Q. 10

Do's

[illegible]

TABLE E**
Alluvial Valleys and Prime Farmland by Mapping Units

MAPPING UNIT		Prime Farmland-	Alluvial Valley
231	Badland	No	No
010	Binton-Councilor-Lybrook association, gently sloping	No	Yes
270	Blancet-Councilor-Binton association, gently sloping	No	Yes
71	Blancet-Lybrook association, gently sloping	No	Yes
181	Deer-Shiprock association, gently sloping	No	No
09	Fort Collins-Navacuity association, gently sloping	No	Yes
032	Fort Collins-Oelop-Gobernador association, gently sloping	No	Yes*
180	Fruitland-Persayo-Sheppard complex, hilly	No	No
031	Gobernador-Fort Collins association, gently sloping	No	Yes
090	Oelop loam, gently sloping	No	No
240	Riverwash	No	Yes
220	Rock outcrop-Travessilla-Shingle complex, extremely steep	No	No
11	Travessilla-Shingle-Oelop association, moderately steep	No	No

* Both Fort Collins and Gobernador are considered in alluvial valleys, while Oelop exists as a remnant of mesas and plateaus which have been dissected by forces of water.

** Those mapping units that are designated as being alluvial valleys do meet the geomorphic criteria for alluvial valleys, but do not meet the water availability criteria as set forth in "Federal Register, Vol. 43, No. 166, Friday, August 25, 1978, pp. 38040, 38041."

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